Medical Lib.

Vol. VI. JULY, 1916. No. 7.

AUG 2 1916
UNIV. OF MICH. LIBRARY

AMERICAN JOURNAL of PUBLIC HEALTH

THE JOURNAL OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

Edited by
SELSKAR M. GUNN

The Place of Nuisances in the Law
Lester W. Feezer, B. S., LL. B.

Occupational Mortality Experience of 94,269 Industrial Workers
Louis I. Dublin, Ph. D.

The Experience of New York City in Grading Market Milk
Lucius P. Brown, M. D.

Reliability of Statements of Cause of Death from the Clinical and Pathological Viewpoints
Haven Emerson, M. D.

Public Health Publicity: Part V. Paid-for Advertising
E. A. Moree

Published Monthly at
5 DEPOT STREET, CONCORD, N. H.

Editorial Office
755 Boylston Street, Boston, Mass.

Entered as Second Class Matter at the Post Office at Concord, N. H.

AMERICAN PUBLIC HEALTH ASSOCIATION, ANNUAL MEETING, CINCINNATI, OHIO, OCTOBER 24–27, 1916.

FRY

Resistance Glassware for Laboratories

"A Pittsburgh Product"

Perfected by Dr. S. R. SCHOLES, Asst. Director, Mellon Institute of Industrial Research, Pittsburgh, Pa.

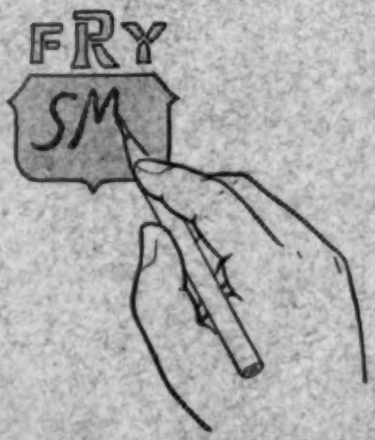
Manufactured by H. C. FRY GLASS CO., in the Pittsburgh District.

Distributed by
SCIENTIFIC MATERIALS COMPANY,
PITTSBURGH, PA.

Tests show FRY Resistance Glass more resistant to the action of both alkalies and acids, particularly acids, when compared with Jena Glass.

FRY Glass showed no alkalinity when heated for a long time with pure water and an indicator.

Jena Glass shows a slow and steady increase.



USE YOUR LEAD PENCIL ON THE ETCHED TRADE-MARK

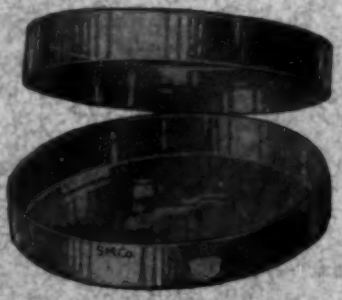
FRY Glass is very heat resistant and will stand severe changes in temperature; it will also withstand the shocks incident to handling.

This is not a brittle glass, but a tough glass, and is, all points considered, the ideal glassware for the laboratory.

WRITE FOR BOOKLET TO THE DISTRIBUTORS

SCIENTIFIC MATERIALS COMPANY
Pittsburgh, Pa.

Everything for the Laboratory



American Journal of Public Health
Official Monthly Publication of the American Public Health Association
Vol. VI JULY, 1916 No. 7

THE PLACE OF NUISANCES IN THE LAW.

LESTER W. FEEZER, S. B., L.L.B.,
Massachusetts State Department of Health.

Mr. Feezer, a member of the bar, has been practicing health rather than law and through his association with the Massachusetts and New York State Departments of Health, is well qualified to interpret this difficult phase of the health problem. In this article he places nuisances in their proper position and explains the most effective methods with which to accomplish their abatement.

LONG ago Justice Blackstone, the great master of the Common Law, defined a nuisance as "that which worketh hurt, injury, or damage"—and it is so even today.

THE POLICE POWER.

The average reader knows that there is inherent in government a species of power known as the police power, that, while the rights of individual liberty and individual property are sacred in the eyes of the law and entitled to a high degree of protection, nevertheless, liberty ends where license begins and license does begin when one individual uses his liberty or his property in such a manner as to transgress the similar rights of other individuals. This principle and this power which we call the police power are given direct or indirect recognition in our constitutional framework of government both in states and in the nation. But this power is older than our constitution, it is older than Magna Charta. To use an ancient legal expression, it comes down from the time when the memory of man runneth not to the contrary.

The Law of Nuisances is older than public health, and the police power by which the law deals with nuisances is older than the public health. Not only this, but they are broader than public health. The old law, being fond of maxims, expressed this relation between nuisances, the rights of individuals, and the police power in the maxim, "Sic utere tuo, ut alienum non lædas." Literally, "Use not that which is yours to the injury of another." Upon this maxim and upon his own profound learning concerning the subject of nuisances Justice Blackstone formulated the definition already stated.

Varieties of Nuisance.

Nuisances are of almost endless variety, they include many things affecting the public generally both as to health and as to other matters and they also include many things which worketh hurt, injury, or damage merely to an individual as well as those which affect the public interest.

It is possible to conceive of many private nuisances. The spite fence is often cited as an example. This example should not be used, however, without calling attention to the fact that it is not spite which makes it a nuisance. And it may be further stated at this point that a nuisance does not depend upon the motive of the person maintaining it or responsible for it. Another common example of a thing long held to be a private nuisance is the case of a house with eaves projecting over the land of another. A private nuisance, therefore, is an injury that results from a violation of private rights and produces a damage to but one or a few persons.

Public and Private Nuisances.

Public nuisances, on the other hand, are those which affect a considerable portion of the public by the violation of what is essentially a public right. Suppose that I have a tract of land and a stream flowing through that land is polluted by the superior riparian proprietor whose land immediately adjoins mine. This act constitutes a violation of my private right, as a landowner and riparian proprietor, to have that water come to me unimpaired in quality and quantity. It is, therefore, a private nuisance. If the pollution or any other act of my neighbor is such that its effect is complete on my property it is nothing more than a private nuisance. On the other hand, suppose that the stream is so polluted that the foreign material is carried far down past the land of many proprietors. Suppose it is a stream which is used by the public for fishing, bathing, and as a source of public water supply. It then becomes a violation of the public right to have a pure stream and although it may constitute a private nuisance to me and to the other riparian owners, it is at the same time a public nuisance.

Nuisances have been called by Dr. Hermann M. Biggs, the New York State Commissioner of Health, "the bane of the average health officer's administration." They have been so much so that health authorities may sometimes be warranted in feeling that all nuisances are health questions. Fortunately they are not all of the sort that affect public health. The list of those which do or may affect public health, and which, by almost immemorial custom, it has fallen to the health officer to deal with, is long enough. There are those nuisances which *do* have a very direct bearing on the public health, a number of others which *may* affect the public health and still others, so long supposed to affect health, that for the present at least the health officer cannot hope to escape the onerous duties which they impose. Appended is a list of acts and things judicially determined to be nuisances, in which those calling most frequently for the health officer's attention are printed in italics.

The Government and Nuisances.

The police power has already been referred to. It should be defined briefly as that power of state government which is for the protection of the health, morals, safety, and welfare of the public. In the United States where the federal government possesses only those powers which have been resigned to it by the states, this power is inherent in *state* government. The federal government exercises only such limited police power functions as are necessarily incidental to the execution of its specific constitutional authority. The local municipal authorities, including city councils, town boards and local boards of health, possess only such portions of this power as are delegated to them by state constitutions or legislative enactment.

The power to deal with nuisances affecting the public health is a portion of the police power and is exercised by health authorities by virtue of this delegation and subject to certain limitations incident to all delegated powers of government.

Nuisance a Question of Fact.

The law affords a number of remedies which may be used in case there is a public nuisance. Some require the intervention of a court and others are administrative.

It may seem a paradox, but I would emphasize, that a remedy, provided by law for relief from a public nuisance, should never be resorted to unless there is a nuisance. The existence of a nuisance is not always an easy question, but must be determined before any action is taken. Upon the certainty of this point depends the security of the health officer's position in case the molested owner seeks revenge. There are actions at law which the man with an alleged nuisance may use to the very great embarrassment of the health officer, if his action has been ill considered.

The Essence of Nuisance.

The gist of a public nuisance is, that the defendant is actually doing the act, or maintaining the thing, which is alleged to be a nuisance and that a right of the public or of a considerable number of persons thereby is being violated, or is in danger of being violated. If the health officer brings suit or takes summary action to abate a nuisance he may be required to prove that this state of facts exists. The motive or intent, as already stated, is not of the essence. It is immaterial whether the defendent's motive in maintaining a nuisance is malicious or not. On the other hand, negligence is no excuse. Also there is no prescriptive right to maintain a public nuisance, that is, the unmolested maintenance of a nuisance does not, by lapse of long years, create an inalienable right to continue doing so.

Some things are nuisances *per se* by virtue of a provision of statute. In such case it is sufficient to show that the thing mentioned in the statute does exist. Other things may or may not be nuisances, depending upon extraneous circumstances. In such case it is obviously necessary to show that the thing not only exists but that the circumstances exist which make it danger-

ous. Complaints of this class of things often come to the health officer, branded by the aggrieved person as a nuisance. A demand that something which annoys a neurasthenic old lady be abated immediately, if not sooner, is a not uncommon experience. All manner of things, remotely, if at all, related to health, are brought to health officials with a demand for immediate action. Some of them are not nuisances at all, others are purely private nuisances affecting only the complainant. Others, while perhaps of a public nature, cannot by the wildest flights of imagination be connected with the subject of health.

Refusal to act upon such a complaint, however trivial or without his jurisdiction, is likely to make for the health officer an enemy, unless he is able to deal with it very wisely and tactfully. The ability to recognize the class to which a nuisance belongs and to explain to the complainant the right method of procedure will be a valuable bit of equipment for any health officer to have and will often assist him in keeping the good will of a constituent. May I add a word of warning to this suggestion—Don't carry your enthusiasm to the point which will constitute practicing law without a license. Remember that the person who needs to avail himself of legal procedure for the enforcement of private rights should be referred to a lawyer and he who wishes to suppress a public nuisance not affecting the public health should be referred to the authorities charged with the prosecution of crime, generally the city solicitor or the district attorney.

The border line nuisances which do not at the time affect the public health but which constitute a menace to it, nevertheless are nuisances, and it is sufficient to establish the act and the inherent danger of the situation without showing that actual injury has taken place. Stagnant water may be of this class. Strangely enough, in dealing with this stagnant-water nuisance the imprint left upon the law by the old miasmatic theory serves our modern purpose now that we know these places to be the possible means of spreading mosquito-born diseases. Indeed many of the acts of this class are nuisances *per se* and it is sufficient proof of nuisance to show that they exist. This is the case with the exposure of persons infected with a contagious disease.

Some of the things which are held to be nuisances *per se* have been so regarded since very ancient times and without statutory enactment. The exposure of infected persons is of this class. More recently a number of other things have been added by statute. In dealing with this class of cases it is obviously necessary that the wording of the statute be carefully borne in mind in case it becomes necessary to take any action against them.

Legal Remedies for Nuisances.

The principal remedies for nuisance are four in number. Indictment, Injunction, Suit for damages and Abatement. All of them may be used under proper circumstances for both public and private nuisance. The action for damages is very rarely if ever suitable for dealing with the public sort.

Indictment.

In very ancient times there were primitive forms of procedure such as the *assize of nuisance*. Indictment is now generally regarded as the original form of action against a public nuisance. This means that a nuisance is a wrong to the state, a minor sort of crime, to be proceeded against as such. While it is little used at present owing to the development of other remedies, indictment must not be forgotten. It is still available and may often be very useful in dealing with some types of nuisance and with some types of defendants not easily or effectively reached by the other forms of procedure. Its principal disadvantage is its slowness. It may often take a considerable length of time to get an indictment and considerably more to secure a conviction under it. Indictment is not a preventive remedy but is a punishment for that which has been done and, as prevention is the object generally sought, other remedies are much more frequently resorted to.

Suit for Damages.

Suit for Damages is brought in the case of a public nuisance only where it also constitutes a private nuisance. In this case the person recovers on the basis of damage to his person or property. At first such damages were recoverable only where there was a technical trespass, that is, an invasion of the property or a direct injury to the person. In the application of this rule it was found that there were many wrongs that were obliged to go unrighted because they did not constitute a trespass. The indirect injury, caused by the pollution of a stream already mentioned, did not constitute an invasion of the plaintiff's land by the defendent and there was consequently no relief unless the act also constituted an indictable public offense.

To meet situations of this sort, the law invented a new form of procedure known as the "action on the case." The indirectly injured person might bring this action and was enabled to recover such money damages as he was able to show himself entitled to. Actions for damage brought at the present time under either statute or modernized common law procedure are the outgrowth of either trespass or the action on the case.

Both the punishment remedy for public and the compensatory damage for private nuisances are "ex post facto" as it were; they do not prevent, even though an order for abatement may be allowed with the judgment for damages when it is shown to be just, and upon conviction under an indictment for nuisance it is very common for the court to issue an order for the abatement of the nuisance.

Equitable Remedies.

Some hundreds of years ago, when the technicalities of the law were so unelastic as to refuse relief except the case came within the narrow prescribed outlines of a common form of action, and when the contemporary medicine was indeed a black art, the king was accustomed to dispense justice in cases where in conscience a wrong ought to be righted and there was no legal remedy. Later it fell to

the Chancellor, the keeper of the King's Conscience, to dispense justice and from this beginning developed the Courts of Chancery or Equity and finally the equitable jurisdiction now dispensed by all courts in most places. Equity soon devised remedies for the situations unrecognized by the law. The most prominent of equitable remedies is known as injunction. The basis of all equitable jurisdiction is the inadequacy of legal relief. It is obvious that this is the very situation in the case of a public nuisance. The public does not want damages in this sort of case and the extent of the damage would be incapable of adequate proof in most instances.

Injunction.

Injunction is the remedy sought in most of the nuisance cases now brought into court. It is impossible in this paper to go into the technicality of injunction and the popular literature of recent years has given the public a general idea of the nature and effect of an injunction. We may therefore pass to the subject of abatement.

Abatement.

The law encourages people to help themselves when troubled with a nuisance and permits individuals to abate private nuisances. The person so doing assumes the risk that he may go too far and become liable for trespass. Public authorities are given by the statute a similar power. Health authorities in case of epidemic have very extensive powers to take summary action for the purpose of abating nuisances dangerous to the public health.

Except in cases of grave emergency, abatement must be preceded by a notice and generally by the opportunity for a hearing where the person responsible is given a chance to show cause why the thing complained of should not be interfered with.

The thing abated must be a nuisance at the time when it is abated. Abatement is a powerful remedy and correspondingly a dangerous one, both for the one who uses it and for the one against whom it is used. The action of health officers in such matters as this is always subject to the possibility of judicial review.

The health officer should exercise his power to deal with nuisances fearlessly for the public good, but he should also play safe and not subject himself to legal process as a result of carelessness.

In closing I would reiterate the following cautions: First of all be sure you have a nuisance existing; secondly, be sure it is a public nuisance; third, make sure it concerns public health, if not try and have it referred to the public prosecutor; fourth, never employ the method of abatement unless there is an immediate necessity and then only upon the advice of the public counsel for your municipality.

Foot Note on Noisome Smells.

Noisome smells probably constitute the great bulk of the nuisances with which health officers are asked to deal. This is so, notwithstanding the fact that such nuisances rarely have the slightest effect upon health. The old fiction of miasms and the sewer-gas bogey are gone, but

they have left to the health officer this legacy of trouble.

It is a useless expenditure of time and energy for the health officer to investigate and suppress this type of nuisance, but tradition has fastened the duty upon him and it must be faced. The increasingly recognized relation of insects, especially flies, to the spread of disease is giving this type of nuisance a renewed importance. The noisome smell complained of may, after all, arise from an accumulation of filth which constitutes a fly breeding place. It is therefore important for the health officer to know something about this class of nuisances. This note cannot go into detail but it should be stated that a noisome smell may be a nuisance independently of its unwholesomeness or danger to health. It is sufficient that such a smell be annoying or offensive to the person of ordinary sensibilities. In other words, a smell so annoying to other persons as to interfere with the public comfort may constitute a nuisance. The distinction between public and private nuisance must be carefully observed in dealing with smells. They are very frequently purely a private nuisance.

Offensive smells sometimes raise the question whether or not statutory provisions giving health authorities certain powers and duties in connection with nuisance compels them to act in such cases. The attorney general of New York in an opinion dated August 10, 1900, without argument makes the following broad statement:

"Sir: I have the honor to acknowledge the receipt of your letter of the 6th instant and in reply will say, that the word '*Nuisance*' as used in the Health Law, relates to such nuisances as are detrimental to health, and to none other."

Partial List of Things Held to Be Nuisances.

29 Cyc 1165.

1. *Advertisements*
2. *Bakeries*
3. Ball games
4. Banking
5. *Barking of dogs*
6. *Barns*
7. *Bawdy houses*
8. Beer
9. Bells
10. Billiard rooms
11. Bituminous coal
12. Blacksmith shop
13. Blast furnace
14. Blasting
15. *Boiling and rendering places*
16. Booms (logs)
17. Bowling alleys
18. *Breweries*
19. Brickmaking
20. Bridges
21. Car barns
22. *Carcasses of dead animals*
23. Carpet cleaning
24. Carriage making
25. Cattle pens
26. Cellar doors on sidewalks
27. *Cement works*
28. Cemeteries
29. *Cesspools*
30. Coal yards
31. Coke ovens
32. Collection of surface water
33. *Contagious diseases*
34. Convict labor
35. Cooking
36. *Dairies*
37. Dams
38. Dangerous animals
39. Dangerous structures
40. *Discharge of sewage or refuse*
41. Diversion of water
42. Dyeing establishments
43. Effigies
44. Electric light plants
45. Excavations
46. Explosives
47. Factories
48. Fair
49. Falling of ice
50. Fences
51. *Fertilizer factories*
52. Fire engines
53. Fire works
54. Foundries
55. Gambling houses
56. *Garbage plants*

57. Gun works
58. Gipsy camps
59. Gold heating
60. Hitching posts
61. *Hospitals*
62. Jails
63. *Laundries*
64. *Livery stables*
65. Machinery
66. Marble works
67. Markets
68. Merry-go-rounds
69. Mills
70. *Moving picture places*
71. Obscenity
72. Obstruction of ways
73. Obstruction of waters
74. Oil wells
75. Oil works
76. *Overflow of water*
77. Overhanging structures
78. Placards
79. *Pollution of water*
80. *Ponds*
81. Pool selling
82. Prize fights
83. Public dances
84. Pumping stations
85. Purprestures
86. Railroads
87. *Saloons*
88. *Sewers*
89. Signs
90. Slaughter houses
91. Smelting works
92. Stud horses
93. Tallow factories
94. Undertaking establishments
95. *Waterclosets and privies*
96. *Wells*
97. Wharves
98. Whistles
99. Wrecks

The titles *underlined* are those most likely to affect public health.

◆

HEALTH INSURANCE—ITS RELATION TO THE PUBLIC HEALTH.

Twenty-five out of every 1,000 employees in American industries, according to recent statistics, are constantly incapacitated by sickness, the average worker losing approximately nine days each year on this account. This "non-effective rate" for the great army of industrial workers in the United States barely suggests the total money loss to employers and employees. The lessened efficiency, the effects of reduced earnings in times of sickness, as well as the cost of medical attention, and the economic loss from deaths, swell the cost to industry and to the Nation to almost incalculable figures.

That much of this loss is nothing less than preventable waste and that this waste can be largely reduced by a properly conducted system of governmental health insurance for wage workers are conclusions set forth in Public Health Bulletin No. 76, containing the results of a study of "Health Insurance—Its Relation to the Public Health," just issued by the United States Public Health Service.

The preventive value of health insurance is given especial emphasis in this study. "Any system of health insurance for the United States or any state should at its inception have prevention of sickness as one of its fundamental purposes," says the bulletin. "This country should profit by the experience of European countries where prevention is being recognized as the central idea necessary to health insurance if health insurance is to attain its greatest success in improving the health and efficiency of the industrial population."

Such a system, it is pointed out in the bulletin, would

1. Provide cash benefits and medical service for all wage-earners in times of sickness at much less cost than is now possible. Adequate medical relief would thus be placed within the reach of even the lowest paid workers who are most subject to ill-health.

2. Distribute the cost among employers, employees, and the public as the groups responsible for disease causing conditions and afford these groups a definite financial incentive for removing these conditions. This can be done by means of small weekly payments from employees, supplemented by proportionate contributions from employers and government at a rate reducible in proportion to the reduction of sickness.

3. Become an effective health measure by linking the coöperative efforts of the three responsible groups with the work of national, state and local health agencies, and by utilizing these agencies in the administration of the health insurance system.

4. Afford a better basis for the coöperation of the medical profession with public health agencies.

5. Eliminate the elements of paternalism and charity-giving by making employees and the public, as well as employers, joint agents in the control of this fund.

"A governmental system of health insurance," concludes the study, "can be adapted to American conditions, and when adapted will prove to be a health measure of extraordinary value."

OCCUPATIONAL MORTALITY EXPERIENCE OF 94,269 INDUSTRIAL WORKERS.

METROPOLITAN LIFE INSURANCE COMPANY EXPERIENCE, 1911–13.

A Preliminary Report Read before the Section on Vital Statistics, American Public Health Association, Rochester, N. Y., September, 1915.

LOUIS I. DUBLIN, PH.D.,

Statistician, Metropolitan Life Insurance Company, N. Y.

IT IS the purpose of this paper to present the preliminary results of an analysis of 94,269 death records of occupied white males, ages 15 and over, with especial reference to the influence of occupation upon the causes of death. The material is from the Industrial Mortality Experience of the Metropolitan Life Insurance Company and covers the three years 1911, 1912, and 1913. The occupations represented in this experience are almost entirely industrial in character. Table I shows that "laborers" form the largest group of decedents, with 11.4 per cent. of the total. All the more important occupations in the various industries are represented. There are large numbers of clerical employees, farmers, and farm laborers, workers in the building trades, in the iron and steel mills, and in the railway service.

A few words as to method may be of interest. The occupations returned upon the death certificates were classified according to a list of titles abridged and modified from the one prepared by the Census Bureau for use in occupational mortality tabulations. Attention was especially directed to those occupations which were represented in large numbers or which possessed exceptional interest from the viewpoint of hazard. The causes of death selected for the study were likewise those which were of the greatest interest because of their numerical importance or because they indicated the character of the hazard in the occupation. The number of deaths from these causes was then tabulated for each occupation by 10-year age periods. Table II presents the general characteristics of the material for all occupied white males combined. The remaining table (III, Parts a–n), is for individual occupations.

It were well if in addition to these tabulations there were available corresponding figures for the living policyholders by occupation and age. We would then have been able to present the death-rates occurring in the various occupations by age period and by causes of death. Unfortunately, this is not possible because of the great cost involved in keeping records in such detail for over ten million industrial policyholders. We may, nevertheless, determine the significant

TABLE I.

OCCUPATIONS OF WHITE MALE DECEDENTS—AGES 15 AND OVER. METROPOLITAN LIFE INSURANCE COMPANY—INDUSTRIAL DEPARTMENT. MORTALITY EXPERIENCE, 1911–13.

Occupation.	No. of Deaths.	Per Cent. of Total.
All Occupations (excluding "Retired")	94,269	100.0
Laborers (undefined)	10,748	11.4
Teamsters, Drivers and Chauffeurs	6,471	6.9
Clerks, Bookkeepers and Office Assistants	4,139	4.4
Carpenters	3,917	4.2
Farmers and Farm Laborers	3,890	4.1
Machinists	3,152	3.3
Painters, Paper-hangers and Varnishers	2,722	2.9
Policemen, Watchmen and Guards	2,407	2.6
Store Clerks and Salesmen	2,396	2.5
Textile Mill Workers	2,390	2.5
Merchants and Storekeepers	2,269	2.4
Saloon-keepers and Bartenders	2,190	2.3
Railway Track and Yard Workers	1,932	2.0
Janitors and Building Employees	1,770	1.9
Masons and Bricklayers	1,748	1.9
Iron Moulders	1,646	1.7
Coal Miners	1,557	1.7
Shoemakers	1,452	1.5
Stationary Engineers and Firemen	1,443	1.5
Children, Students and Scholars	1,437	1.5
Blacksmiths	1,273	1.4
Professional Service	1,186	1.3
Agents and Canvassers	1,183	1.3
Plumbers, Gas Fitters and Steam Fitters	1,153	1.2
Tailors and Garment Workers	1,095	1.2
Compositors and Printers	1,056	1.1
Railway Enginemen and Trainmen	947	1.0
Street Railway Employees	868	.9
Hostlers and Stablemen	832	.9
Hucksters and Peddlers	829	.9
Sailors and Marine Workers	787	.8
Iron and Steel Mill Workers	762	.8
Waiters	758	.8
Cabinet and Furniture Makers	757	.8
Cigar Makers and Tobacco Workers	693	.7
Leather Goods Workers	662	.7
Bakers	654	.7
Longshoremen and Stevedores	651	.7
Tinners and Tinware Workers	614	.7
Street and Sewer Cleaners	609	.6
Electricians	596	.6
Barbers	582	.6
Coopers	521	.6
All Other Occupations	15,534	16.5

TABLE II.

NUMBER OF DEATHS FROM PRINCIPAL CAUSES AND PER CENT. EACH CAUSE OF ALL CAUSES IN ALL OCCUPATIONS (EXCLUDING "RETIRED")—BY AGE PERIODS OVER FIFTEEN YEARS—WHITE MALES.
METROPOLITAN LIFE INSURANCE COMPANY—INDUSTRIAL DEPARTMENT—MORTALITY EXPERIENCE, 1911–1913.

Cause of Death.	International List No.	Ages 15 and over.		Ages 15–24.		Ages 25–34.		Ages 35–44.		Ages 45–54.		Ages 55–64.		Ages 65 and over.		Av. Age at Death.
		No. of Dths	*Per cent.	No. of Dths.	Per cent.	No. of Dths.	Per cent.	No. of Dths.	Per cent.	No. of Dths.	Per cent.	No. of Dths.	Per cent.	No. of Dths.	Per cent.	
All causes		94,269	100.0	11,116	100.0	12,953	100.0	15,242	100.0	16,696	100.0	19,135	100.0	19,127	100.0	47.9
Typhoid fever	1	1,390	1.5	581	5.2	356	2.7	211	1.4	128	.8	81	.4	33	.2	31.1
Influenza	10	769	.8	64	.6	65	.5	94	.6	113	.7	189	1.0	244	1.3	53.3
Tuberculosis of the lungs	28, 29	19,349	20.5	3,753	33.8	5,292	40.9	5,017	32.9	3,084	18.5	1,640	8.6	563	2.9	37.1
Cancer (all forms)	39–45	4,578	4.9	76	.7	103	.8	357	2.3	989	5.9	1,665	8.7	1,388	7.3	57.8
Acute articular rheumatism	47	380	.4	105	.9	46	.4	52	.3	75	.4	51	.3	51	.3	41.1
Chronic rheumatism and gout	48	69	.1	4	.....	6	.....	6	.....	10	.1	20	.1	23	.1	54.9
Diabetes	50	913	1.0	110	1.0	92	.7	100	.7	171	1.0	249	1.3	191	1.0	49.7
Alcoholism	56	889	.9	21	.2	182	1.4	314	2.1	227	1.4	106	.6	39	.2	43.1
Chronic lead poisoning	57	81	.1	3	.....	8	.1	24	.2	24	.1	14	.1	8	.....	47.5
Other occupational and chronic poisonings	58, 59	31	.....	4	.....	4	.....	7	.....	7	.....	4	.....	5	.....	45.8
Cerebral hemorrhage, apoplexy and paralysis	64, 66	5,825	6.2	52	.5	160	1.2	350	2.3	864	5.2	1,845	9.6	2,554	13.4	60.9
Organic diseases of the heart	79	11,323	12.0	640	5.8	697	5.4	1,181	7.7	1,850	11.1	3,048	15.9	3,907	20.4	55.6
Acute and chronic bronchitis	89–90	804	.9	30	.3	36	.3	52	.3	103	.6	213	1.1	370	1.9	59.9
Pneumonia (lobar and undefined)	92	6,776	7.2	599	5.4	952	7.3	1,228	8.1	1,369	8.2	1,431	7.5	1,197	6.3	48.1
Pleurisy	93	276	.3	46	.4	30	.2	40	.3	59	.4	55	.3	46	.2	46.1
Cirrhosis of the liver	113	2,136	2.3	22	.2	154	1.2	389	2.6	635	3.8	593	3.1	343	1.8	52.0
Bright's disease	120	9,059	9.6	276	2.5	577	4.5	1,190	7.8	1,851	11.1	2,553	13.3	2,612	13.7	55.1
Suicide (all forms)	155–163	2,150	2.3	308	2.8	402	3.1	436	2.9	428	2.6	383	2.0	193	1.0	43.1
Accidental violence	165–181, 185–186	8,752	9.3	2,130	19.2	1,616	12.5	1,516	9.9	1,419	8.5	1,236	6.5	835	4.4	39.3
All other causes of death		18,719	19.9	2,292	20.6	2,175	16.8	2,678	17.5	3,290	19.7	3,759	19.6	4,525	23.9	.....

* Percentage, deaths from specified causes, of deaths from all causes in age period.

TABLE III.

NUMBER OF DEATHS FROM PRINCIPAL CAUSES AND PER CENT. EACH CAUSE OF ALL CAUSES, IN FOURTEEN OCCUPATIONS BY AGE PERIOD OVER FIFTEEN YEARS—WHITE MALES.

METROPOLITAN LIFE INSURANCE COMPANY—INDUSTRIAL DEPARTMENT—MORTALITY EXPERIENCE, 1911-1913.

Part	Occupation.	Cause of Death.	Age Period.								Average Age at Death.
			15 and over.		15-24.	25-34.	35-44.	45-54.	55-64.	65 and over.	
			No. of Deaths.	*Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	
a	Blacksmiths	All causes	1,273	†(1,273) 100.0	(47) 100.0	(87) 100.0	(165) 100.0	(235) 100.0	(337) 100.0	(402) 100.0	55.4
		Tuberculosis of the lungs	178	14.0	29.8	28.7	35.8	17.0	8.3	3.0	43.9
b	Cigar Makers and Tobacco Workers	All causes	693	(693) 100.0	(66) 100.0	(98) 100.0	(95) 100.0	(121) 100.0	(158) 100.0	(155) 100.0	49.5
		Tuberculosis of the lungs	167	24.1	48.5	44.9	41.1	25.6	11.4	1.9	37.9
		Suicide (all forms)	22	3.2	3.0	2.0	4.2	3.3	3.8	2.6	49.3
c	Clerks, Bookkeepers and Office Assistants	All causes	4,139	(4,139) 100.0	(1,307) 100.0	(893) 100.0	(695) 100.0	(518) 100.0	(431) 100.0	(295) 100.0	36.5
		Tuberculosis of the lungs	1,449	35.0	46.3	51.2	33.4	21.6	8.8	1.7	29.4
d	Coal Miners	All causes	1,557	(1,557) 100.0	(151) 100.0	(135) 100.0	(182) 100.0	(319) 100.0	(407) 100.0	(363) 100.0	51.3
		Tuberculosis of the lungs	91	5.8	4.0	11.9	12.1	6.6	3.4	3.3	45.8
		Acute and chronic bronchitis	49	3.1	....	.....	1.1	1.6	4.2	6.9	63.6
		Pneumonia (lobar and undefined)	161	10.3	4.6	7.4	10.4	14.7	11.3	8.8	53.1
		Suicide (all forms)	18	1.2	.7	2.2	2.2	2.2	.7	....	44.6
		Accidental violence	317	20.3	62.9	43.7	30.7	15.7	10.3	4.1	36.6
e	Compositors and Printers	All causes	1,056	(1,056) 100.0	(217) 100.0	(221) 100.0	(225) 100.0	(176) 100.0	(120) 100.0	(97) 100.0	40.2
		Tuberculosis of the lungs	360	34.1	45.2	49.8	39.1	23.9	15.8	3.1	33.5
f	Farmers and Farm Laborers	All causes	3,890	(3,890) 100.0	(239) 100.0	(198) 100.0	(266) 100.0	(431) 100.0	(1,008) 100.0	(1,748) 100.0	58.5
		Organic diseases of the heart	641	16.5	5.9	3.5	6.8	13.7	18.5	20.4	63.6
g	Laborers	All causes	10,748	(10,748) 100.0	(622) 100.0	(1,026) 100.0	(1,453) 100.0	(2,049) 100.0	(2,732) 100.0	(2,866) 100.0	52.8
		Suicide (all forms)	186	1.7	4.8	2.9	2.1	1.5	1.7	.7	44.9
h	Machinists	All causes	3,152	(3,152) 100.0	(573) 100.0	(565) 100.0	(500) 100.0	(509) 100.0	(516) 100.0	(489) 100.0	43.9
		Suicide (all forms)	81	2.6	1.6	3.5	3.2	3.3	1.4	2.5	43.8

i	Painters, Paperhangers and Varnishers	All causes	2,722	(2,722)	(166)	(368)	(552)	(592)	(592)	(452)	
				100.0	100.0	100.0	100.0	100.0	100.0	100.0	48.6
		Chronic lead poisoning	54	2.0	.6	1.1	3.4	2.5	1.9	.9	47.7
j	Railway Enginemen and Trainmen	All causes	947	†(947)	(203)	(300)	(173)	(109)	(94)	(68)	
				100.0	100.0	100.0	100.0	100.0	100.0	100.0	37.4
		Tuberculosis of the lungs	133	14.0	11.8	14.7	24.9	13.8	7.4	....	34.8
		Organic diseases of the heart	51	5.4	1.0	1.3	5.2	10.1	13.8	17.6	52.2
		Suicide (all forms)	23	2.4	2.5	2.3	2.9	2.8	2.1	1.5	36.7
		Accidental violence	401	42.4	66.5	57.7	30.0	18.3	17.1	7.4	30.1
k	Railway, Track and Yard Workers	All causes	1,932	(1,932)	(177)	(243)	(232)	(334)	(475)	(471)	
				100.0	100.0	100.0	100.0	100.0	100.0	100.0	50.7
		Accidental violence	402	20.8	43.5	34.6	32.3	19.5	13.0	8.3	41.4
l	Saloon-Keepers and Bartenders	All causes	2,190	(2,190)	(57)	(492)	(775)	(535)	(243)	(88)	
				100.0	100.0	100.0	100.0	100.0	100.0	100.0	42.6
		Alcoholism	75	3.4	3.5	4.7	4.5	2.2	1.2	....	38.8
		Cirrhosis of the liver	165	7.5	....	4.5	8.3	10.7	6.6	6.8	44.4
		Bright's disease	267	12.2	3.5	6.3	10.7	17.4	18.1	15.9	46.8
		Suicide (all forms)	60	2.7	3.5	3.9	2.3	1.9	3.7	2.3	41.2
m	Teamsters, Drivers and Chauffeurs	All causes	6,471	(6,471)	(768)	(1,498)	(1,579)	(1,152)	(818)	(656)	
				100.0	100.0	100.0	100.0	100.0	100.0	100.0	42.2
		Tuberculosis of the lungs	1,825	28.2	36.6	42.7	35.7	20.2	10.0	4.0	35.5
n	Textile Mill Workers	All causes	2,390	(2,390)	(383)	(282)	(310)	(399)	(495)	(521)	
				100.0	100.0	100.0	100.0	100.0	100.0	100.0	47.6
		Suicide (all forms)	43	1.8	2.3	1.4	1.0	3.5	1.4	1.2	45.4

• Per cent. deaths from specified causes, of deaths from all causes in age period.

† Superposed figures denote total deaths, all causes, in specified age period.

facts in the relation between occupations and causes of death by the method of proportionate mortality, that is, by comparing the per cent. of total deaths from any one cause in a given age period and in a specified occupation with the corresponding figure for all occupied persons. For example, at the age period 25 to 34, 28.7 per cent. of the deaths among blacksmiths were due to tuberculosis of the lungs (see Table III, a*). For the same age period, the corresponding proportion of deaths from tuberculosis of the lungs among all occupied males was 40.9 per cent (Table II). The ratio of these two percentages may be conveniently called the index of mortality for the specified cause. In this instance the index of mortality for tuberculosis of the lungs among blacksmiths in the age period 25 to 34 is 70.2 per cent. It is quite evident, therefore, that pulmonary tuberculosis among blacksmiths at the age period 25 to 34 does not require the same relative attention from hygienists as it does in certain other occupations.

The fuller paper will take up in this manner each of the occupations and consider the causes of death which present the greatest variations from the standard of "all occupations." In this paper we shall refer only to a few of the more interesting considerations which arise out of the study. Thus we find that pulmonary tuberculosis was the most represented cause of death in ten out of the fourteen occupations referred to in these tables. It was found most common among clerks, bookkeepers, and office assistants (Table III, c) where it was responsible for 35 per cent. of all the deaths. In the age period 25 to 34, 51.2 per cent. of all the deaths were from this disease, whereas, among all occupied males in this age period, only 40.9 per cent. of the deaths were from pulmonary tuberculosis. The index of tuberculosis mortality among clerks, bookkeepers, and office assistants is, therefore, 125, the index for this disease was also found high among compositors and printers (Table III, e) and among teamsters, drivers, and chauffeurs (Table III, m). It was found least represented among coal miners (Table III, d), where it was responsible for only 5.8 per cent. of all the deaths. In the age period 25 to 34 we find only 11.9 per cent. of all the deaths due to this disease. The index of tuberculosis mortality, therefore, is 29 per cent. This low index is characteristic of the disease among coal miners at all age periods up to 65. It might appear that the low proportionate mortality from pulmonary tuberculosis among coal miners is the result of the high proportion of deaths from other causes, notably accidental violence. Yet other respiratory diseases such as pneumonia and acute and chronic bronchitis are even more prevalent among coal miners than among all occupied males. A fairly large proportion of tuberculosis is found among railway employees, who suffer from a higher proportion of accidents than do the coal miners. A high percentage from accidents is, therefore, not incompatible with a fairly normal proportionate mortality from pulmonary tuberculosis. Coal miners seem to

*Owing to limitations of space, it has been considered inadvisable to print the tables for individual occupations in full; only those causes of death are given to which reference is made in the text.

enjoy a very definite immunity from pulmonary tuberculosis. Future medical research, in determining just what the protective factor in the environment of the coal miner is, will make an advance that will be of great practical value.

Organic disease of the heart ranks next in importance in our investigation. It is responsible for 12 per cent. of all deaths in all age periods combined. Unlike tuberculosis, which is most prevalent at the younger ages, this disease reaches its highest point in the advanced age periods, namely, 65 and over, where 20.4 per cent. of all deaths are due to it. It is also the leading cause of death in the age period 55 to 64. It is found most prevalent among farmers and farm laborers (Table III, f), among whom it was responsible for one death out of every six. This is not an indication of poor health conditions among farmers, however, for farmers live to a ripe old age, and organic disease of the heart is, as we have shown, primarily a disease of the older ages. This disease is found least represented among railway enginemen and trainmen. Inferences must not be drawn too readily from the relative proportion of heart disease in various occupations, since it is one of the more unsatisfactory returns of cause of death found on certificates, obscuring in many instances more definite conditions which autopsy could determine.

Alcoholism is one of the minor causes of death in our tabulation; yet it is so significant socially that reference will be made to it. It was responsible for only .9 per cent. of all the deaths among all occupied males. This figure is clearly an understatement, because deaths which are due to alcoholism are often assigned to its major effects. Thus we find that those occupations which are most subject to alcoholism show also a higher rate from Bright's disease and cirrhosis of the liver. Alcoholism is found most prevalent among saloon-keepers and bartenders (Table III, l). Among them it was responsible for 3.4 per cent. of the total deaths. In the age period 25 to 34, it caused 4.7 per cent. of all deaths and, in the age period 35 to 44, 4.5 per cent. If we add to this the proportionate mortality from cirrhosis of the liver and Bright's disease we obtain 23.5 per cent. of all the deaths. Among all occupied males, on the other hand, these three diseases in the age period 35 to 44 are responsible for only 12.5 per cent. of all the deaths. The unfavorable effect of occupation is, therefore, quite clear in the case of saloon-keepers.

A strong positive correlation, in all probability, exists between the incidence of alcoholism and that of suicide. This latter cause was responsible in our investigation for 2.3 per cent. of all the deaths at all ages (Table II). The proportion varies somewhat in the various age periods, but is greatest at ages 25 to 34. It is most prevalent among cigar makers (Table III, b), saloon-keepers and bartenders (Table III, l), machinists (Table III, h) and railway enginemen and trainmen (Table III, j); in other words, among occupations where the wear and tear on the nervous system is greatest. Its importance as a cause of death is least noted among coal miners (Table III, d), laborers (Table III, g) and textile mill

workers (Table III, n). Recent investigators have urged that suicide is a form of insanity. On this basis, it would appear that the high incidence of suicide among saloon-keepers and bartenders may be in part the result of the insanity induced by alcoholism. This opens up a fertile field of investigation for both the statistician and the psychiatrist.

Accidental violence is found to be most prevalent among enginemen and trainmen (Table III, j), coal miners (Table III, d) and railway, track, and yard workers (Table III, k). It is most highly represented at the younger ages in all these occupations. Thus, among railway enginemen and trainmen, the index of mortality for accidental violence in the age period 25 to 34 is 461.6; in the age period 55 to 64 this index is reduced to 263.1. These indices, when compared with similar figures for European mortality experiences, show how inadequate American methods of accident prevention still are.

Occupational diseases are represented in small numbers. Lead poisoning is found significant among painters, paper hangers, and varnishers (Table III, i). In this occupational group 2 per cent. of all the deaths occurring were due to chronic lead poisoning, and in the age period 35 to 44 this proportion rose to 3.4 per cent. Other occupational diseases are so rarely recorded as not to warrant any special mention.

In this preliminary statement I have been able to review only a few of the more important causes of death, as represented in a small number of occupations. Sufficient has been said, however, to show that this method of investigation is a profitable one for furthering industrial hygiene. I would therefore suggest that health officers of states and cities take note of the recommendations made last year by the Committee on Occupational Mortality of this Section on Vital Statistics, American Public Health Association, and that they attempt to analyze and report their mortality returns by occupation, cause of death, and age period. Local communities often have certain hazardous occupations largely developed in their midst, and enjoy splendid opportunities for the intensive investigation of the effects of occupation upon the life and health of the worker. They can, at small expense, determine the number of workers in any particular industry, their age, their occupational environment, the character of the illnesses which are treated by the local physicians, the evidence of physical deterioration during service, and finally the mortality as shown by the death certificates which they receive. Such local reports prepared over a series of years would extend the findings of the Census Bureau and of life insurance companies, and would often have enormously important practical results in improving the hygienic conditions of the industry studied. It is also hoped that this Section will again take active steps in urging the Federal Government to bring to a successful conclusion the investigation of occupational mortality begun by the Census Bureau in connection with the returns for the year 1910.

THE EXPERIENCE OF NEW YORK CITY IN GRADING MARKET MILK.

LUCIUS P. BROWN,
Director Food and Drugs Bureau of the Department of Health of New York City.

Read before a General Session of the American Public Health Association, Rochester, N. Y., September 7, 1915.

In a remarkably clear and lucid style, Mr. Brown states the manner in which the largest city in the country has dealt with the problem of controlling its milk supply. While the essentials of the system are few, their execution is a big task. Read what Mr. Brown has to say about it.

I. IN a city of large size it is impossible to so safeguard a milk supply confined to raw milk only, at any reasonable cost, as to insure its absolute safety.

II. The present system of milk control in New York City has justified itself by the absence of any considerable milk-borne epidemic of typhoid or other disease within the past two years, and by the ease with which any epidemic appearing can be now traced and controlled.

III. The New York system of milk control is necessarily a growth of many years, and is a development proceeding pari passu with the growth of knowledge in preventive medicine and particularly of knowledge of the principles of pasteurization.

IV. The essential features of New York City's milk control system are:

(a) Pasteurization of all milk except that intended for special uses.

(b) In connection therewith bacteriologic standards properly administered.

(c) The labelling of all packages intended to go to the consumer.

(d) Constant inspection and supervision of the pasteurizing plants, which is an inspection that it is physically and economically possible to make efficient, in direct contrast with the attempt to handle an enormously large number of dairies and their employees, a thing which can be done efficiently only at prohibitive cost.

To thoroughly understand the situation in New York City a short statement of the problem is desirable.

This problem is as follows: The control, both chemical and sanitary, of a milk supply for a city of about five million people, with the aim not only of avoiding raising the cost of the milk, but, if possible, of actually extending its use as a cheap and easily digested food. Analysis of the milk supply shows that about two and one-quarter million quarts of milk (not including cream and condensed milk) are consumed daily in the city,* furnished by seven states and by two provinces in

* The equivalent of an additional two and three-quarter million quarts is represented by cream and condensed milk. The requirements for cream are same as for milk, except that the bacteria count is allowed to be five times higher.

the Dominion of Canada. It is estimated that about 50,000 dairies, about 440,000 cows and about 300,000 people are employed. This milk supply is handled in 60 city and 436 country pasteurizing plants and there are 700 shipping stations for milk shipped raw to the city pasteurizing plants. The longest haul upon milk coming to New York is about 460 miles, and 80 per cent. of it over 200 miles.

The machinery at hand for controlling the milk supply is of course that under the control of the City Board of Health. Under the Constitution of New York State, and charter of New York City, the ordinances of this Board have the effect of laws; its powers are absolute and very broad, being limited only by the disposition of the city's financial boards to appropriate the funds necessary for the enforcement of the laws made by the Board of Health.

Following is a statement of the chief successive steps taken for the control of New York City's milk supply which have led up to the system now in effect. The first step taken was in 1873, when "swill" milk was forbidden. In 1876 a code section was passed by the Board of Health forbidding watered milk. In this control, however, only the well known lactometer of the New York City Board of Health was used. The producers finally learned how to beat this lactometer and in 1895 chemical standards were set up.

In 1897 a permit system was inaugurated for wagons and milk stores. In 1900 the cooling of milk in transit was begun and there has been progressive improvement in this particular feature since that time. In 1902 one milk inspector was sent to the country to examine the sources of supply. In 1904 the milk inspection work, which was formerly done by the separate boroughs, was centralized in the hands of the City Board of Health and a regulation was made that all milk must be kept, while in process of shipment or sale, at a temperature not greater than 50 degrees Fahrenheit. In 1905 a systematic inspection of creameries was begun and certain deficient ones were forced out of business. In 1906 the two inspectors then at work began the inspection of the dairy farms proper, and sixteen new inspectors were added. Rules and regulations for the guidance of dairymen were made; and these appear to have been very well received by the dealer, because of the help it gave him in regulating his own business. In 1907 a beginning of the exclusion system was made; the requirements being that weekly reports be made by creamerymen and dairymen of contagious diseases occurring in their establishments, and they were required to cease handling their milk on occurrence of any such diseases. Failure to comply with this regulation meant the exclusion of their milk from the city. This principle was afterwards applied to other conditions. Milk stores were likewise regulated as to sanitary condition, and the score card system was adopted. A notable occurrence during this year was the appointment of the McClellan Commission of Physicians, in the report of which it was recommended that 100 country and forty

city inspectors be appointed. It will be noted that up to this time all the regulations were designed toward the securing of a satisfactory raw milk supply. In 1908 the first notice in an official way of pasteurization was made. This regulated pasteurization, which had to be conducted under permit. During the same year the exclusion system was extended to unsanitary conditions at the creameries and dairies, and the wagon permits were made conditional on satisfactory report of conditions of production and distribution. Likewise in this year the classification of milk appears to have been first made. It was graded into selected, inspected, guaranteed and certified, all conditioned on inspection by medical societies or in accord with regulations of the Board of Health, taking cognizance of conditions of the cows, bacterial count, time of delivery, etc. Pasteurized milk was allowed to be sold under permit; and there were supplementary regulations on pasteurization passed. The most notable occurrence of this year was the requirement that there should be attached to the container which reached the consumer or from which the consumer, in the case of loose milk, was served, a tag indicating the location of the dairy or creamery and the date of shipment. In 1909 pasteurized milk was defined and it was provided that the tags above mentioned must be kept for two months.

It will be noted that still up to this time little notice had been taken of pasteurization. But in 1910 a Board resolution (not having the direct effect of law) was passed, advising the public that all milk for drinking should be either boiled or pasteurized, and a tentative plan for grading was made based on the broad division of

(a) Milk for infants to drink.

(b) Milk for adults to drink.

(c) Milk for cooking only

These still form the broad general basis for grading.

In 1911 announcement was made that after January 1, 1912, all milk except special high grade milk was to be pasteurized. The warning of this contemplated action was given so far ahead because of the necessity of making changes in the plants of milk dealers.

At the end of 1911 there was a conference, participated in by dealers, the New York Milk Committee, the officials of the department and certain physicians, which assumed that in addition to pasteurized milk two grades of raw milk, one for children and one for adults, could be sold, based on prescribed tests for tuberculosis in cows. These rules went into effect in 1912, and are indicated on table herewith. This step was enabled by the advance of knowledge as to pasteurization, and, as will be seen, by recognition of the impossibility of properly inspecting a raw milk supply of this size. It was in no sense a backward step. In the year 1913, from the outbreak of a very bad milk-borne typhoid epidemic (1,100 cases in all), there resulted the abolition of Grade B raw milk, the pasteurization of all milk of this grade and the establishment of bacteriologic standards throughout. There resulted likewise the simplifying of Grade A

and the inclusion of cream in the pasteurization requirements.

This summary gives some indication of the weary road traversed by those men to whom is due the credit for the present excellent supply of milk for New York City. It will be noted that the essential features are pasteurization almost exclusively, and bacteriologic control of the raw and pasteurized milk, except in Grade A. It will be noted from table 2 that dairy scores are still used to assist in controlling the farms. This in no sense allows of the pasteurization of dirty milk. As a matter of fact, as is well known to those having to do with milk control, dirty dairies with their concomitant of careless and dirty methods almost invariably produce dirty milk, while on the other hand the clean dairy produces clean milk. Because of this human factor, a fair control of the condition of Grade B dairies may be effected through the bacteriologic examination of the milk. Grade A, which is naturally that milk requiring more supervision, is of course designed for the use of children, and must be, therefore, absolutely above suspicion. By requiring that no milk of a lower grade than A be handled in a Grade A plant, the necessary distinction as to that grade is readily secured. Mr. Russell Sturgis, formerly Chief of the Milk Division of the Bureau of Food and Drugs of the Health Department of New York City, in an excellent paper published in 1915, on "The Rôle of Dairy Inspection in Safeguarding a City's Milk Supply," and to which I am indebted for a very large part of what I have been saying, suggests that possibly at some future time, when the private inspection systems of the milk companies have been more completely developed, it will be found that the score card standard, at present neglected, will be appreciated as a measure of value. As a matter of actual fact all companies handling milk desire of course to furnish Grade A milk, selling for the highest price. They therefore pay the farmer a premium for clean dairies and clean milk and this operates as incentive to the producer to improve his conditions.

It has often been objected to pasteurization, in the language of certain gentlemen of florid imagination, that the sale of pasteurized milk containing dead organisms—a sort of bacteria soup—is strictly parallel to the sale of a milk soup made from oysters of an uncertain vintage. I think experience hardly sustains this violent assumption! Whether it be true or not, however, the impossibility of handling a very large milk supply, such as that for the city of New York, without prohibitive cost for inspection as well as without raising the cost of raw milk to the consumer to a prohibitive figure, can be readily appreciated. Moreover, a raw milk supply of this size which is absolutely safe is a matter of practical impossibility under present conditions, if for no other reason, because of the absolute impossibility of keeping out, in the enormous number of people through whose hands the milk supply goes before reaching the consumer, carrier cases of typhoid, diphtheria, and the like.

In addition to the occasional farm inspection by the Department, farm inspection is promoted on the part of the companies by the necessary cor-

rection of conditions indicated by our inspections and counts, by the efforts of small companies trying to remedy faults, and by dairymen who are trying for the premiums for high dairy scores given by the companies. It may be further added that, prior to 1912 and the inception of this system of milk control, one or more typhoid outbreaks every year in New York City, which could be directly fastened on the milk supply, were the rule, and usually these were of very considerable size.

In 1914 and 1915 there has, up to date, been only one small milk-borne epidemic of typhoid, promptly stopped by shutting off the milk-supply, and only ninety direct cases in all. This occurred in a pasteurized supply, and appears to have been due either to a carrier case handling the milk after pasteurization, or, much more probably, to the water-supply of the creamery becoming suddenly polluted.

A short description of the methods used by the Department may be of interest. It is required that the pasteurization be conducted between 142 degrees Fahrenheit and 145 degrees Fahrenheit for not less than 30 minutes, and of course cooling after pasteurization must be very prompt. In making his inspection the inspector of course carefully examines all pipes and connections from pumps and other apparatus, taking everything apart if necessary to assure himself of cleanliness. He watches the sterilizing of the pipes and vats before use. In the actual handling of the milk he notes its condition as to dirt upon receipt and watches to see that it is not exposed to dust. If the automatic temperature recorder is used, its accuracy is tested at each inspection. These recording devices indicate the holding period very well except in case of continuous retarders, and in this type of apparatus the holding period is best ascertained by watching the speed at which the milk is pumped through. It is cooled, preferably to 45 degrees or lower, and then the milk is immediately bottled or canned for shipment. By taking the temperature of cooling at frequent intervals, the inspector is able to advise whether the hot milk is fed to the cooler too fast to obtain good results. Special stress is laid on the cleanliness of bottles and cans used for holding pasteurized milk. For this a sterile water control is used in the bacteriologic examination, and inspectors are kept closely informed of all results, their personal effort being of great value in this connection. Water samples for this purpose are transmitted to the laboratory for a count in the same way as the milk samples, 50 cc. of sterile water being used for washing each can or bottle. The accepted standard is for bottles, 1,000 total bacteria in each 50 cc. so treated, and 40,000 for cans.

Schedules for inspection are so arranged that samples of milk are taken during inspection of pasteurizing plants at certain intervals. I quote from Sturgis' paper previously mentioned, as follows:

"Four samples are taken at each of the various steps, and from these four individual samples an average is obtained which fairly reflects the quality of the milk and also serves as a check upon the thoroughness of pasteurization. Usually these samples

are taken from (a) the raw milk (b) at the outlet of the holder or after the milk has been heated and held (c) from the outlet of the cooler (d) from bottles or cans that have been filled for shipment. These samples are thoroughly chilled, packed in ice, and shipped in the milk car to the city terminal, where they are collected upon arrival and taken to the laboratory."

Our present inspection force consists of twenty-one country inspectors and twelve city inspectors. The country inspector's duty consists in the inspection of plants as just mentioned, and of dairies. Grade A dairies are inspected three times a year and as much oftener as possible. Other dairies are inspected when the occasion allows. All inspections of dairies and creameries are recorded on score-cards of the New York city form, the dairy cards being made in duplicate and a copy left at the farm. The pasteurizing plants are not scored, but are recorded on a special card where only changes from the last inspection are noted. This is also in duplicate but the copy is sent to the office, and from there sent to the company responsible instead of being left direct with the company. On occasion, the epidemiology of suspected milk-borne diseases is investigated by these country men.

The city inspectors watch the supply to the point of delivery, that is to say, either to the retail store or to the customer if no store enters. The stores themselves are inspected by inspectors of the Food Division of the Bureau of Food and Drugs, avoiding in this way duplication of work. Of the twelve city milk inspectors attached to the Division of Milk Inspection, three are on bacteria samples, five on samples for chemical analysis, two on pasteurizing plants alone, and two on the large city dairies and on the pasteurizing plants in outlying portions of the city. It is interesting to note here that within the city of New York itself there are over 100 dairies, with about 5,000 cows. Each of the bacteria squad takes sixty-eight samples daily of raw milk going to pasteurizing plants or of the pasteurized milk as offered for sale, making, all told (including forty samples each for the two men on the pasteurizing plants), 284 samples of milk taken in the city for bacterial examination daily. A list of the various supplies is furnished to each man, and it is estimated that he will cover his field in three to four weeks. The chemical squad takes samples from wagons, about sixty-five a week in all. It will thus be noted that from 1,600 to 1,800 samples for bacteriologic and chemical analysis are taken per week for milk inspection purposes.*

It is proper to state that for a considerable portion of the information given in this paper I am indebted to a monograph bearing the name of Lederle & Raynor, published by the Department of Health, and to the paper by Russell Sturgis, Chief of the Division of Milk Inspection, heretofore alluded to.

It is perhaps unnecessary for me to state that my recent connection with the New York City Health Department has made it impossible for me to prepare this paper without much help from others.

* It should be stated that this has been much increased since this paper was read.

TABLE 1—1912.

GRADE A.

(1) *Certified or Guaranteed*

(2) *Inspected Raw*

Dairies: Equipment 25
Methods 50
Bacteria: 60,000 per cc.

(3) *Selected Pasteurized*

Dairies: Equipment 20
Methods 40
Bacteria: 200,000 before, 50,000 after } Pasteurizing

GRADE B.

(1) *Selected Raw*

Dairies: Equipment 25
Methods 43
Bacteria shall not be excessive

(2) *Pasteurized*

No dairy standard
No bacteria standard

GRADE C.

For Cooking

At first allowed raw—later required heated or pasteurized
No standards

TABLE 2—1914.

GRADE A.

(1) *Raw*

Dairies: Equipment 25
Methods 50
Bacteria: 60,000 per cc.

(2) *Pasteurized*

Dairies: Equipment 25
Methods 43
Bacteria: 200,000 before, 30,000 after } Pasteurizing

GRADE B.

Pasteurized

Dairies: Equipment ..... 20 at present
Methods ..... 35 not enforced
Bacteria: 1,500,000 before pasteurized in city
300,000 before pasteurized in country
100,000 after pasteurized

GRADE C.

Pasteurized

Dairy total 40
Bacteria 300,000

WILL ORGANIZE WORKING MEN IN TUBERCULOSIS FIGHT.

Organization of all of the working men and women of the United States, including the systematic collection of funds from both employers and employees for local anti-tuberculosis campaigns, is proposed in a report issued today by The National Association for the Study and Prevention of Tuberculosis, entitled "Working Men's Organizations in Local Anti-Tuberculosis Campaigns."

The report discusses various experiments that have been tried by working men in different parts of the United States to organize for effective service in the anti-tuberculosis campaign, and recommends a plan which would comprehend the following features, based upon the best in all the schemes studied:

(1) A simple organization representing employers and employees closely allied with the local anti-tuberculosis society of the community. The organization will provide for the establishment of a tuberculosis fund either on the basis of individual factories or groups of factories.

(2) A plan for collecting funds to be used for the relief of tuberculous workers and their families by free will offerings from employers and employees. Employers will be urged in all cases to duplicate the joint collections of employees. The collections will not be a tax or assessment, and will constitute a special tuberculosis fund in addition to those of regular benefit societies.

(3) A systematic campaign for medical examination of all workers at yearly or more frequent intervals.

(4) The appointment of special committees to give relief to fellow-workers and their families suffering from tuberculosis from the funds collected. Any worker in a community where a fund is started who develops tuberculosis will be cared for.

(5) Carrying on of educational and legislative work through the organization.

(6) The collection of statistics about occupational mortality from tuberculosis.

Every anti-tuberculosis association in the United States will be urged to use this report as a basis for organizing the factories and shops in its community in the anti-tuberculosis campaign. "This is not the best form of coöperation of workers in the anti-tuberculosis campaign" says the report. "The ideal form would be the adoption of the German or British health and sickness insurance plans to American experience. The plan proposed here is a near approach toward insurance against tuberculosis since it proposes coöperation of the worker, the employer and the state, the latter in caring for consumptives in public institutions at reduced rates."

Editorial Section

Selskar M. Gunn, Editor
Prescott W. MacNeill, Business Manager

Editorial Assistants

A. D. Hiller J. S. MacNutt W. H. Coon, M. D.
L. W. Feezer D. F. Ryan

Board of Advisory Editors

Dr. Peter H. Bryce, Ottawa, Canada. Dr. Livingston Farrand, Boulder, Col.
Dr. Charles V. Chapin, Providence, R. I. Prof. George C. Whipple, Cambridge, Mass.
Dr. William C. Woodward, Washington, D. C.

All expressions of opinions and all statements of supposed facts are published on the authority of the writer over whose signature they appear and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association

NOTICE TO SUBSCRIBERS

SUBSCRIPTION PRICE, $3.00 a year, in advance, to any point in the United States or its possessions. Foreign Countries, 50 cents extra for postage. Canada, 25 cents extra for postage. Single copies, 30 cents.
ADVERTISEMENTS accepted only from reliable firms. Fraudulent and misleading advertisements barred.
IN CHANGES OF ADDRESS both the old and new addresses must be given.
RENEWAL BILLS are sent one month in advance. Prompt attention to them prevents discontinuance from the mailing list. Magazines are not sent beyond the subscription period.
As the MAILING LIST for each month's issue closes on the first of that month, changes of address, renewals, subscriptions, etc., must reach us before that date to be effective with that issue.
COPYRIGHT, 1916, by Selskar M. Gunn.

INFANTILE PARALYSIS IN NEW YORK CITY.

New York City's visitation of infantile paralysis, with the resulting widespread publicity and grave public alarm, gives this disease a particular current interest. We are reminded how the public was aroused over a country-wide prevalence of infantile paralysis a few years ago and also how the country forgot it when the crest of the wave had passed.

The number of cases reported brings the New York situation undeniably within the somewhat elastic classification "epidemic." The alarming suddenness with which the epidemic flamed up, the large number of cases and the apparently high case mortality all combine to make the name of infantile paralysis a fearsome one to the parents of young children.

While our knowledge concerning this disease has increased wonderfully during the past few years, it is by no means complete. There is obviously something lacking. It is to be hoped that the sad experience of the present days may add more light to an obscure subject.

Ignorance in matters dealing with pestilential disease is the chief breeder of fear. It is a good sign of the times to be able to quote the following sensible editorial from the Boston *Journal* of July 3:

"One of the first precautions to be taken in fighting an epidemic has to do with the psychological side of the situation; the authorities must consider the public mind, and keep that mind free of the hysteria and panic which, more often than not, intensify and spread the calamity. Governments knew that, even in the olden times when secrecy was the only method of preventing panic. Secrecy, of course, is no longer practised in enlightened communities.

"The modern policy of publicity and education in combating disease has nowhere been given better illustration than in New York's present campaign against the terrible and increasing epidemic of infantile paralysis there.

"New York's total number of cases, 379 up to last Saturday, is proportionately no greater than the number found in many smaller cities in recent years, but as a total it looks large, and without the precaution of a cool and sensible educational effort by the health authorities the mental state of the city would be uncomfortable indeed.

"Plague panics have been many. . . . Except for modern methods of handling the multitude, mental conditions today might very well coincide with those of other days when the plague was as little understood as infantile paralysis is today. Uninformed people of today might, like those of centuries ago, adopt their own futile and foolish means of avoiding the monster, were it not for the careful publicity managed by the local governments. The press performs a mighty service in such emergencies. In the age of the plague there were no such advantages. The New York papers, with daily reports in detail, are at the right hand of the Health Department.

"As for the disease known as infantile paralysis—the medical profession, after years of research, is still so baffled as to be unable to explain the scourge or to offer a certain remedy for it. It steals upon a community from unknown sources, strikes this way and that, respecting neither filth nor cleanliness, neither health nor strength, and dealing death and deformity on its way. The records show that it attacks healthy children rather than the unhealthy; in rich homes and in poor; nor are adults immune.

"Contrary to a theory much in vogue a few years ago, many eminent doctors now declare the germ is not carried by insects. . . . The mucous membrane is known to carry the disease, and communication can be effected through coughing or kissing. Northern Europe is held guilty as the breeding ground of infantile paralysis, but no corner of the world is free of it, and no season of the year is clear of it, although the height of its ravages is reached in August.

"The country, too, stands to learn much from New York's experience. Organized effort for protection of the public health has been none too strong anywhere. We find useful lessons in this as in all calamities."

RELIABILITY OF STATEMENTS OF CAUSE OF DEATH FROM THE CLINICAL AND PATHOLOGICAL VIEWPOINTS.

HAVEN EMERSON, M. D.,
Commissioner of Health, New York City.

Read before the Vital Statistics Section, American Public Health Association, Rochester, N. Y., September, 10, 1915.

IT WOULD be superfluous to call more than passing attention to the necessity of scrutinizing the quality of the raw material from which such elaborate conclusions are manufactured as appear in the course of the analysis of mortality statistics. We may or may not permit ourselves to draw any reasonable lesson from the figures, according to the accuracy of clinical observations and the completeness of the recording of deaths. With the completeness of records we are not here concerned. This is a matter of administrative enforcement. I ventured at the risk of some quite natural resentment and criticism to call attention in a previous paper to the fact that little or no value attached to the reports of deaths from certain sources, notably from the coroner's office in New York City, and I recommended at that time that a forward step was indicated for registrars of health departments in separating the verified causes of death, as checked by pathologists' reports, from the records of deaths where insufficient data was available to justify an accurate statement. A beginning has been made in this direction in the Bureau of Records of the Department of Health, New York City.

It is evident that various clinical pictures of disease and certain surgical procedures offer either by direct observation or by the use of refinements of laboratory procedure as reliable a proof of the cause of death as does the examination of the dead body by the pathologist. However careful the subsequent analysis, and however complete the reporting of deaths, inaccuracy in the primary statement of the cause can never be overcome. The cause of this inaccuracy is the lack of thorough clinical and pathological training of physicians. Pending higher standards of medical education and the general use of the autopsy to check the accuracy of clinical diagnosis, something more can be done to separate the certificates as presented, into groups, such as probably correct, and doubtful or questionable.

In studying the main headings of the international list of the causes of death as to their acceptability from the clinical and pathological viewpoint, we find many which are quite certain to be used only when direct observation during life, with or without verification obtained by operation, X-ray, or specific laboratory reactions, has justified the designation. Other causes are listed which may well be accepted if verified as the result of post-mortem examination of the body by a competent pathologist.

There remain, however, a number of headings which are commonly used by clinicians and represent unverified impressions or are susceptible of such various interpretations as to be unacceptable as causes of death.

As an instance of the change of designation which would result if all the reports from insane asylums were based upon autopsies, I would quote from a recent article by Enge, *Medizinische Klinik*, Berlin, June 20, 1915, XI, No. 25, pp. 687–714, in which he reports that, of 248 insane patients dying in an institution, 80 per cent. died from physical affections. Morbid conditions of the heart were found in 73.38 per cent. of the 248.

He found 26.61 per cent. of the mortality of Lubeck Insane Asylum for 16 years to be due to hypostatic or aspiration pneumonia, and 3.44 per cent. of mortality of men and 5.82 per cent. among the women to be due to cancer.

Of 248 cadavers studied, chronic nephritis was found in 48, pyelonephrosis in 4, fatty degenera-

tion of kidney in 7 and amyloid kidney in 1. The gall bladder was found diseased in 18.

Strecker (*loc. cit.*) found pathologic changes in the heart in 61.7 per cent. of men and 42.7 per cent. of women among 1,000 cadavers from the Dalldorf Asylum, and in only 27 per cent. and 23 per cent. respectively in 1,000 cadavers of non-insane.

Well-considered arguments, for the general use of the autopsy to correct clinical diagnosis of causes of deaths, and an excellent statement of the limitations of acceptability of statements of death, together with useful references, has appeared since this paper was read, viz.: *Journal of the American Medical Association*, October 16, Lewis.

Furthermore among the main headings properly listed as non-acceptable unless based on autopsy or other equally reliable supporting data, some sub-heads would not be used except with ample proof in hand of the validity of the report.

If, for the sake of argument, we separate the certificates of death as recorded, into those which have been made out after post-mortem examinations, and those in which no autopsy was performed, and further separate the latter (non-autopsied) group into acceptable and non-acceptable, we find that, although there are many headings properly falling in the non-autopsied acceptable group, the sum of these represents but an inconsiderable fraction of the total mortality.

If we analyze the causes of death which make up any large proportion of the total mortality, we find that many of these leading causes fall into the unacceptable group, that is, a group of causes of death which would be unacceptable to clinicians and pathologists in the absence of such confirmatory proof as post-mortem examination alone or equivalent specific proof during life could provide.

Of the 189 causes of death in the international list, I believe that 113 should be generally accepted when presented, whether a post-mortem examination has been made to verify the diagnosis or not. These acceptable headings are referred to only by number, as it is taken for granted that anyone interested enough to study the matter on his own account will be familiar with or have access to the international classification of causes of death. The remaining 74 headings appear to me to be generally unacceptable as causes of death upon which to base further study or from which to draw reliable conclusions, unless they are accompanied by post-mortem evidence or other data of equivalent value obtained during life.

The following consideration of these 76 headings is based on some familiarity with the errors in diagnosis observed during service as assistant attending physician at Bellevue Hospital, where the opportunity to verify clinical diagnosis was often presented at the city morgue. The opinions herein expressed have met with the approval of Dr. Charles Norris, pathologist of Bellevue and Allied Hospitals.

Unacceptable (with Proviso that if Supporting Data Is Presented They May Be Received in Acceptable Group).

4. Malaria: unless the presence of plasmodium malariæ had been proved by examination of blood.
10. Influenza: unless bacillus influenzæ is identified microscopically or biologically.
11. Miliary Fever.
23. Rabies.
25. Mycoses: unless supported by microscopic proof of the mycelium.
29. Acute Miliary Tuberculosis: unless tubercles have been found in some accessible part of the body during life, as in the retina.

30. Tuberculous Meningitis: unless proof of tubercle bacillus in spinal fluid is presented.
31. Abdominal Tuberculosis: unless abdominal operation or recovery of tubercle bacillus from abdominal fluid is presented.
37. Syphilis: unless diagnosis was based on lesions superficially situated or visible through body orifices, or confirmed by unquestioned Wassermann reaction.

40. Cancer of Stomach and Liver
41. Cancer of Peritoneum, Intestines and Rectum
45. Cancer of Other Organs

} unless operation had been performed, or the neoplasm was otherwise visible or accessible for direct observation.

46. Other Tumors (except Those of Female Genital Organs).
48. Chronic Rheumatism and Gout.

53. Leuchemia
54. Anemia and Chlorosis

} unless report of microscopic blood examination is presented.

55. Other General Diseases.
57. Chronic Lead Poisoning.
58. Other Chronic Occupation Poisonings: unless lesions were superficial, or were accessible to direct inspection, or chemical or microscopic proof was obtained.
59. Other Chronic Poisonings: unless presence in the body of the particular poison has been proved.

60. Encephalitis
61. Simple Meningitis

} unless operative or microscopic proof, as in spinal fluid, is presented.

63. Other Diseases of the Spinal Cord.
64. Cerebral Hemorrhage and Apoplexy.
65. Softening of the Brain.
66. Paralysis without Specified Cause.
67. General Paralysis of the Insane.
68. Other Forms of Mental Alienation.
69. Epilepsy: unless death occurred in a major attack and was witnessed.
70. Convulsions (5 Years and over).
71. Convulsions (under 5 Years).
73. Neuralgia and Neuritis.
74. Other Diseases of the Nervous System.
77. Pericarditis: unless the inflammatory exudate was obtained on paracentesis.

79. Organic Diseases of the Heart
97. Pulmonary Emphysema

In spite of the accuracy with which the characteristic physical signs of the classical cardiac and pulmonary lesions can be demonstrated by a competent physician, the frequency of error as disclosed by autopsy, and the habit of assigning to this heading deaths from doubtful or obscure causes, will explain the inclusion of this heading among the unacceptable group, unless supported by autopsy. The importance which this heading is assuming in the present-day discussion of the incidence (increasing?) of diseases of degeneration affecting the age groups over 40, requires us to scrutinize our basic facts before determining the need or character of the campaign for prevention which is urged by those who rest satisfied with the clinical diagnoses of today.

81. Diseases of the Arteries, Atheroma, Anaeurism, etc.: except where an aneurism is visible or accessible to direct observation.

82. Embolism and Thrombosis: unless operation has disclosed the nature of the obstruction.

83. Disease of the Veins
84. Diseases of the Lymphatic System
85. Hæmorrhage; Other Diseases of Circulatory System

except when accompanied by report of operative procedure, or direct observasion of lesion.

96. Asthma.

98. Other Diseases of the Respiratory System (Tuberculosis excepted): unless exploration has provided positive evidence as of abscess or asperigillosis.

101. Diseases of the Œsophagus: unless direct inspection or measurement is the basis of diagnosis.

102. Ulcer of the Stomach: unless operation has exposed the lesion to view.

103. Other Diseases of the Stomach (Cancer excepted): unless the evidence is given, as possible in fistula, foreign body, gastrectomy (and other surgical procedures involving stomach), or laceration of stomach.

108. Appendicitis and Typhilitis: unless diagnosis is verified by operation.

109. Hernia: if visible, by virtue of position on body surface or exposed by operation.

110. Other Diseases of the Intestines: unless diagnosis is based on observation as result of operation.

111. Acute Yellow Atrophy of the Liver.

112. Hydatid Tumor of the Liver: unless evidence of character of tumor by microscopic examination of tumor contents is provided.

113. Cirrhosis of the Liver: unless abdominal paracentesis has been repeatedly performed with withdrawal of fluid, and exclusion of passive congestion, syphilis and neoplasm has been determined.

114. Biliary Calculi: unless specimen was recovered or diagnosis is based on operation and inspection.

115. Other Diseases of the Liver: unless diagnosis is based on operation and inspection.

116. Diseases of the Spleen: except splenotomy.

118. Other Diseases of the Digestive System (Cancer and Tuberculosis excepted)
122. Other Diseases of the Kidneys and Adnexa
} unless surgical procedure is basis of diagnosis.

123. Calculi of the Urinary Passages
124. Diseases of the Bladder
} unless operation or direct inspection has been availed of.

130. Other Diseases of the Uterus
132. Salpingitis and other Diseases of the Female Genital Organs
} unless cause assigned is direct result of operative procedure or surgical accident specified, or the lesion to which death is attributed is accessible to direct inspection.

140. Following Childbirth (not otherwise Defined).

151. Congenital Debility, Icterus, and Sclerema.

(1) Premature Birth (not Stillborn): the headings under this subdivision may properly be accepted.

(2) Congenital Debility: the headings under this subdivision are not acceptable without autopsy.

152. Other Causes Peculiar to Early Infancy.

(1) Injuries at Birth (not Stillborn): the headings under this subdivision may properly be accepted.

(2) Other Causes Peculiar to Infancy: the headings under this subdivision are acceptable only where the lesion or the evidence of it is apparent on direct inspection.

153. Lack of Care.
154. Senility.
155. Suicide by Poison: only when the poison supposed to have been used is found on examination of body fluids or visceral contents.
156. Suicide by Asphyxia: unless identity of gas is proved upon the body.
158. Suicide by Drowning: unless the act was witnessed.
164. Poisoning by Food: unless specific organisms are obtained from food used.
165. Other Acute Poisonings: unless the taking or the administration of the poison was witnessed.
169. Accidental Drowning: unless the act was witnessed.
186. Other External Violence: unless violence was witnessed and visible damage of sufficient degree to cause death is reported.
187. Ill-Defined Organic Disease.
188. Sudden Death.
189. Cause of Death not Specified or Ill Defined.

Of the total number of headings, 23 are not to be accepted as reliable without autopsy; 53 are to be accepted only if specific supporting data has been obtained upon which diagnosis was based; 113 are to be accepted as reliable without autopsy or other verification.

Of the total mortality of New York City in 1914, 2,875 or 3.8 per cent. fall under the first classification (not to be accepted as reliable without autopsy), 27,995 or 37.4 per cent. fall under the second classification (to be accepted only if specific supporting data has been obtained upon which diagnosis was based), and 43,933 or 58.8 per cent. fall under the third classification (to be accepted as reliable). That is, tested by clinical and pathological standards, 41.2 per cent. of recorded deaths are from questionable causes.

The proposal presented to separate acceptable and questionable groups appears to me a necessity for the sake of further progress in the prevention of disease. I believe the matter should be studied in detail by a committee of statisticians, pathologists and clinicians, and presented to the international commission for adoption as a classification to be used now and modified as improvements in clinical skill and methods of precise diagnosis permit.

TUBERCULOSIS MOVEMENT INCREASED 1600 PER CENT. IN 12 YEARS.

Statistics made public recently by The National Association for the Study and Prevention of Tuberculosis show that nearly 3,000 agencies are now listed in the fight against tuberculosis in the United States, an increase of 1600 per cent. since 1904, when the national warfare on this disease was started. These figures are taken from a new tuberculosis directory just issued by the Association.

The list includes 557 sanatoria and hospitals, 158 tuberculosis boarding houses, 90 hospitals for the insane and 35 penal institutions making special provision for tuberculosis, 455 dispensaries, 310 open air schools, and 1,324 anti-tuberculosis associations and committees. To these are added 158 Canadian institutions and associations, making a total of 3,087. The directory also gives a summary of municipal and state legislation on tuberculosis.

When the National Association was formed in 1904 and the first list of agencies was printed, only 183 organizations and institutions were found. The second edition of the Directory in 1908 reported 649 different agencies; and, 1,440 were listed in the third edition published in 1911. On the basis of the latter figures, the number of agencies in the anti-tuberculosis movement has increased 115 per cent. in the last five years.

COMPARATIVE BACTERIOLOGICAL EXAMINATION OF SHELL LIQUOR AND MEATS OF OYSTERS.

LESTER A. ROUND,
Bacteriologist, Bureau of Chemistry, Washington, D. C.

Read before the Laboratory Section of the American Public Health Association, Rochester, N. Y., September 10, 1915.

DURING the last twenty-five years there have been various methods used for the bacteriological examination of oysters. These methods may be classified as follows:* (1) Examination of the shell liquor; (2) examination of the minced oyster meat or of a portion of the oyster so removed as to contain a part of the intestine; or (3) a combination of the two methods. The first method is by far the easiest and is the one which has been in common use for the past few years.

The most interesting feature of all work done on the bacteriology of the oyster is the fact that no one has mentioned the mucus in the liquor or on the body of the oyster or apparently considered that it played any part in the bacteriology of shellfish. The mucus is so self-evident that it seems impossible that it should have been entirely neglected. This mucus serves two purposes: (1) It acts as a protection to the body of the oyster just as the mucus of the dog-fish and other selachians protects their skin from the deleterious influences of the salt water. (2) The other and more important function from the bacteriological point of view is that it serves as a net for the entrapping of the food of the oyster such as diatoms and algæ and other microscopic organisms.† As a consequence a large percentage of the bacteria in the filtered water gets entangled in the mucus.

Everyone who has handled oysters is familiar with the slime that clings to the oyster meat and the difficulty with which it is removed. If one collects the liquor from an opened oyster and lets it stand for a short time in a tube or bottle it will be seen that it separates into two layers, a heavy, viscous layer at the bottom and a clear, limpid layer above. The bottom layer is the mucus which precipitates out. Of course this mucus interferes a great deal in getting an even suspension of the shell liquor. But aside from the part played by the mucus in the liquor the mucus left on the body of the oyster is, generally speaking, much more important. Usually much more mucus is left upon the body of the oyster than is found in the shell liquor and as the mucus is the part of the oyster that catches and holds the bacteria it follows that often there are more bacteria, espe-

* A review of the various methods will be found in Round, "Contributions to the Bacteriology of the Oyster," pages 1 to 88, published by the Commissioners of Shellfisheries of Rhode Island, 1914.

† Considerable evidence has been brought forward recently indicating that diatoms and algæ form but a small percentage of the food of the oyster.

cially of the B. coli type, left on the body of the oyster than are found in all the shell liquor. Since the ratio between the number of bacteria in the liquor and on the body of the oyster varies greatly, it follows that the examination of the shell liquor is a very poor index of the number of bacteria really present in the oyster. This is especially true of bacteria of the B. coli type.

The idea of comparing the bacteriological content of the shell liquor and of the body of the oyster is not new. Houston* performed a number of experiments to determine this point. Houston's work, however, took no account of the mucus on the body of the oyster. He thought that by pouring water over the body of the oyster he could remove all the bacteria present. Accordingly he collected the liquor from the opened oysters in a flask and placed the oyster meats upon a sterile wire gauze in a sterile funnel. He then poured sterile water over the oyster meats and added this to the oyster liquor. He then determined the number of B. coli per cc. of this liquid and the average number per cc. of oyster liquor. The oyster meats were removed from the funnel, cut up with sterile scissors and macerated with sterile water. The average number of B. coli for the meat of each oyster was then determined. He assumed that all the bacteria were washed from the body of the oyster by simply pouring water over it. He also assumed that all the bacteria coming from the macerated bodies came from the stomach. Further he assumed that all the bacteria could be removed from the stomach and intestine of the oyster by simple maceration. Under these assumptions he concludes that "volume for volume the oyster liquor contains 30 times as many bacteria as the oyster body." But assuming that all the bacteria from the macerated bodies came from the stomach and that the stomach contents is $^1/_{10}$ cc. he concludes that "on this assumption the coli-like microbes were three times more numerous per unit of volume in the stomach or intestinal juice than in the oyster liquor."

The assumptions upon which this reasoning is based are contrary to fact. The experiments of the writer (*loc. cit.*) have shown that the bacteria on the outside of the body are dislodged with great difficulty and that simply rinsing in water will remove only a small percentage of them. Further the analysis of the shell liquor and of the stomach contents of 41 oysters showed that in only two instances was the number of bacteria per unit volume in the stomach contents greater than in the shell liquor. In one instance the numbers were equal. In the remaining 38 oysters there were many more per unit volume in the shell liquor than in the stomach contents. The ratio per unit quantity in these 38 oysters varied from 3 to 2 to 2,000 to 1. Taking the average of the 41 oysters as a whole there were more than twenty times as many bacteria per cc. in the shell liquor as there were in the stomach contents. From these experiments and others to be detailed later it is fair to assume

* Fourth Report of Royal Sewage Commission, Vol. III, 1904.

that Houston's results are a comparison of the bacteria in the shell liquor with those on the body of the oyster, but owing to his technique the figures do not show the actual numbers that could be washed from the bodies of the oysters.

Consideration of the biology of the oyster led the writer to believe that the mucus played a part in the bacteriology of the oysters hitherto unappreciated. Accordingly, the following experiments were performed.

September 29, ten oysters were collected from the beds and taken immediately to the laboratory and examined at once in the following manner: the oysters were opened according to "Standard Methods" and the liquor drained into a small bottle graduated into two cc. divisions. The oysters were allowed to drain until a drop would not come away at least every five seconds. The amount of liquor was then read off and an equal amount of sterile salt solution added and the whole shaken vigorously one hundred times. The body of the oyster was removed from the shell and placed in a sterile jar and a quantity of sterile salt solution added equal to the quantity of the shell liquor. The jars were covered and allowed to stand a few minutes while the oyster juice was being inoculated into petri dishes and bile fermentation tubes. The oyster meats and salt solution were then stirred vigorously with a sterile pipette and an attempt was made to remove as much of the mucus from the body of the oyster as possible. Then one cubic centimeter of the solution and dilutions thereof were inoculated into agar plates and bile fermentation tubes in the same manner as in the case of the oyster juice. A careful record was kept of the number of cubic centimeters of juice obtained from each oyster and the amount of salt solution used in washing each oyster in order to make a comparison of the bacterial content of all the shell liquor with the total number of bacteria washed from the bodies of the oysters. This would show which part contained the greater number of bacteria.

The same experiment was repeated with oysters obtained October 7. The total number of bacteria found in the shell liquor and the washings from the bodies of the oysters is shown in the following table:

TABLE SHOWING THE TOTAL NUMBER OF BACTERIA IN THE SHELL LIQUOR OF EACH SAMPLE AND THE TOTAL NUMBER WASHED FROM THE BODIES OF THE SAME OYSTER WITHOUT SHAKING.

		20°C. count.	B. coli count.
Sept. 29	Shell liquor.....	330,000	7,400
	"Washings".....	48,000	1,700
Oct. 7	Shell liquor.....	480,000	5,900
	"Washings".....	50,000	850

These results did not equal the writer's expectations and it was thought that perhaps the treatment of the oyster meats was not sufficient to remove all the mucus and bacteria present. Accordingly the following method of analysis was adopted for the subsequent experiments: The oyster liquor was collected and diluted as

before. It was shaken vigorously one hundred times before inoculation into the agar plates and bile fermentation tubes. The body of the oyster was transferred after draining to a sterile large-mouthed, glass-stoppered bottle and covered with twenty cubic centimeters of 1 per cent. salt solution. The oysters and salt solution were shaken vigorously one hundred times, and the solution of salt and mucus was removed with a pipette or poured aseptically into a smaller glass-stoppered bottle and again shaken vigorously one hundred times. This mixture was then inoculated into the bile tubes and the agar plates. At first a 1 per cent. solution of sodium carbonate was used with the hope that it would cut the mucus more readily, but later the salt solution was found to be just as effective. The shaking appeared to be the important factor.

It was found that a great deal of shaking was necessary in order to break up the clumps of bacteria and separate them from the mucus. If not thoroughly shaken, the resulting

TABLE SHOWING THE TOTAL NUMBER OF BACTERIA IN THE SHELL LIQUOR OF EACH SAMPLE OF TEN OYSTERS AND THE TOTAL NUMBER WASHED FROM THE BODIES OF THE OYSTERS BY SHAKING.

	No. of experiment.		20°C. count.	37°C.		B. coli count.
				Total count.	Red* count.	
October 13	1	Shell liquor	650,000	.....	.....	4,800
		"Washings"	500,000	.....	.....	14,000
October 23	2	Shell liquor	190,000	.....	.....	178
		"Washings"	45,000	.....	.....	500
October 27	3	Shell liquor	200,000	.....	.....	113
		"Washings"	100,000	.....	.....	2,080
October 31	4	Shell liquor	50,000	.....	.....	2,500
		"Washings"	24,000	.....	.....	3,200
November 3	5	Shell liquor	78,000	.....	.....	2,000
		"Washings"	15,000	.....	.....	2,600
November 8	6	Shell liquor	1,050,000	.....	.....	17,000
		"Washings"	140,000	.....	.....	8,800
December 6	7	Shell liquor	100,000	39,000	10,000	4,000
		"Washings"	15,500	6,900	1,500	4,400
December 19	8	Shell liquor	130,000	30,000	3,000	850
		"Washings"	35,000	3,000	800	275
June 19	9	Shell liquor	.....	.....	.....	12,200
		"Washings"	.....	.....	.....	46,000
June 23	10	Shell liquor	.....	.....	.....	130,166
		"Washings"	.....	.....	.....	404,200
June 29	11	Shell liquor	.....	.....	.....	27,720
		"Washings"	.....	.....	.....	252,200

*Red count indicates the acid-formers in litmus-lactose agar.

plates would be found to contain large areas of confluent colonies which rendered counting impossible. Every bit of mucus would be found to be a nucleus around which would be a large confluent ring of colonies. After a thorough shaking, however, the bit of mucus would be found in most cases to be sterile and the bacteria would be found in well separated colonies evenly distributed in the medium. The following table shows the results of these experiments:

In comparing the total number of bacteria in the shell liquor of all the oysters in each of the experiments with the total number washed from the bodies of these oysters it is seen that the total number of bacteria in the shell liquor of all the oysters was greater than the number washed from the bodies of the oysters. In the first experiment the numbers are nearly equal, but in the subsequent experiments there is a great difference. If we consider the individual oysters in all the experiments, we find that in only ten of the oysters out of seventy-seven was there a greater number of bacteria washed from the body than was found in the shell liquor of the corresponding oyster. In one instance the numbers were equal. In the remaining sixty-six oysters there were more bacteria in the shell liquor that were washed from the bodies of the oysters. The 37°C. count and the "red count" were made on only seventeen oysters and in only two instances did the number of bacteria washed from the bodies of the oysters exceed the number found in the shell liquor, while the total number from all the oysters of the two experiments showed that there were on the average a great many more in the shell liquor than were washed from the bodies of the oysters.

When we consider the number of B. coli found in the shell liquor and the number washed from the body of the same oyster we find the relative numbers quite different. It will be seen in nine out of the eleven experiments the total number of B. coli washed from the bodies of all the oysters of the experiment exceeded the total number in the shell liquor. In the first two and the last three experiments the difference is especially marked. If we consider the individual oysters we find that in forty-eight instances there were more B. coli on the body of the oyster than were in the shell liquor; in thirty-five oysters the number in the shell liquor exceeded the number washed from the body; in fourteen instances the numbers were equal. But if we consider the total number of B. coli found in the "washings" with the total number found in the shell liquor of all the oysters examined in this series of experiments, we find there were on the average more B. coli in the "washings" than there were in the shell liquor.

We have no reason at present to suppose that B. coli should be distributed other than equally among the other bacteria in the oyster, yet there seems to be a concentration of B. coli in the mucus on the outside of the body of the oyster. The amount of shell liquor in the oysters averaged about ten cubic centimeters. If we consider that there was left upon the body of the oyster one cubic centi-

meter of mucus, we find that there were volume for volume more than ten times as many B. coli on the body of the oyster as there were in the shell liquor. During the warm weather the ratio is several times greater. The question arises at once as to whether this unequal distribution of B. coli among the other bacteria in these two parts of the oyster is real or only apparent. It may be due to the difference in methods of analysis.

This relationship between the bacterial content of the shell liquor and the mucus on the body of the oyster has been known but has been attributed to other causes, hence the real reason has been obscured. Thus the Committee on Standard Methods for the Examination of Shellfish in their second report* state that for shucked stock higher dilution should be used than for the examination of shell stock.

While B. coli will undoubtedly multiply in oysters under certain conditions, the writer has kept oysters in the shell at a temperature of 10° C. and examined them from time to time for eighty days and did not note any material increase or decrease in the B. coli content during the period.†

Another point which appears interesting to the writer is that there is apparently a direct relation between the temperature of the water from which the oysters are taken and the relative number of B. coli found in the shell liquor and on the body of the oyster. It will be noticed that in the first three experiments there were a great many more B. coli on the body of the oyster than in the shell liquor, but this proportion is gradually reduced and in the sixth and eighth experiments there were more B. coli

TABLE ARRANGED ACCORDING TO TEMPERATURE SHOWING THE APPROXIMATE RATIO OF THE TOTAL NUMBER OF BACTERIA IN THE SHELL LIQUOR TO THE NUMBER IN THE WASHINGS FROM THE BODIES OF THE OYSTERS IN EACH SAMPLE.

Temperature.	Date.	20°C. count.	37°C.		B. coli count.
			Total count.	Red count.‡	
16°C.	Oct. 13	1.3:1	....	....	1:3
16°C.	Oct. 27	2:1	....	....	1:18
13.5°C.	Oct. 23	4.2:1	....	....	1:2.8
13°C.	Oct. 31	2:1	....	....	1:1.3
12°C.	Nov. 3	5.2:1	....	....	1.3:1
12°C.	Nov. 8	7.5:1	....	....	2:1
8°C.	Dec. 6	6.5:1	6:1	7:1	1:1.1
6°C.	Dec. 19	3.7:1	10:1	4.7:1	3:1
Exact temperature unknown	June 19	....	....	....	1:3
	June 23	....	....	....	1:3.1
	June 29	....	....	....	1:9

* Jour. Am. Pub. Health, Vol. II, 1912, p. 34.

† Contributions to the Bacteriology of the Oyster (*loc. cit.*).

‡ Red count indicates acid-formers in litmus-lactose agar.

in the shell liquor than were found on the bodies of the oysters. The ratio of the total number of bacteria in the shell liquor to the total number washed from the bodies of the oysters in each sample is shown in the preceding table:

Thus in October when the water was warm there were always more colon bacilli on the bodies of the oysters than in the shell liquor. During November and December when the water had cooled down considerably the ratio changed and there were always more colon bacilli in the shell liquor than on the bodies. In June, when the water had become warm again, the relation changed and approximated that which obtained during the warm fall months. This condition is not so different from that which we might expect when we consider the biology of the oyster.

The optimum temperature for the growth of the oyster is probably between 20°C. and 25°C. At this temperature the cells of the oyster are most active. The mucus cells will secrete a larger amount of mucus and the gills will filter a larger amount of water than at decidedly lower temperatures. The more mucus secreted the more will remain clinging to the body of the oyster. Generally speaking, the greater the amount of mucus secreted and the greater the quantity of water filtered the greater the number of bacteria we would expect to find in the mucus on the outside of the body. As the temperature of the water lowers, the metabolic processes of the oyster are correspondingly slowed and the smaller the amount of mucus is secreted and a smaller quantity of water filtered and for this reason fewer bacteria will be found on the body of the oyster. For this reason it seems fair to assume that the apparent relation between the temperature of the water and the proportion of B. coli on the outside of the oyster and in the shell liquor is real and not accidental.

These two sets of experiments throw light upon the findings of Houston cited above. It is easily seen that the simple pouring of water over the body of the oyster is not sufficient to remove all the bacteria. The experiments of the writer on the comparison of the bacterial content of the stomach and the shell liquor shows that per unit volume the shell liquor contains on the average over twenty times as many bacteria as the stomach juices. Evidence from all sides shows that Houston's assumptions that all the bacteria were washed from the body of the oyster by simply pouring water over the oyster, and further that the bacteria found in the minced meat of the oysters so treated came entirely from the stomach, are not in accordance with the facts.

From these experiments it can be seen that for experimental work, in which one wishes to make comparative bacteriological determinations of the oysters in the shell and of shucked oysters from the same lot during various steps in handling in the opening house or during shipment, one must employ a method of examination which is applicable to both shell and shucked oysters and which uses, in all cases, so far as possible, the same material for examination.

In 1914 the writer, in the work previously referred to, described a method of analysis which included the examination of both the shell liquor and the mucus from the body of the oyster. While this method has since been used to some extent and is theoretically more accurate in determining the bacterial content of shell oysters, it has for comparative work the same disadvantage as the examination of the shell liquor, namely, that it is not applicable to the examination of shucked oysters because the shell liquor is included with the washings from the oyster meats. With the object of having a method of analysis applicable to both shell and opened stock and so make the results of the analysis of both comparable, Mr. Bates, of the Bureau of Chemistry, and the writer have modified the method previously advocated by the writer in 1914 by discarding the shell liquor and using only the washings from the bodies of the oysters.* This brings the examination of shell and opened stock to the same basis and gives for experimental purposes a method of comparison which is impossible in the present "Standard Methods."

*Bates and Round: Comparative Bacteriological Examination of Shell Liquor and Meats of Oysters. Paper read before the 41st Annual Meeting of the Am. Pub. Health Assn., Rochester, N. Y., Sept. 6–10, 1915.

ENGLAND WARS ON CANCER.

That the policy of "business as usual" applies to constructive efforts for the prevention of disease in England is evident from the publication by the Central Midwives Board as recently as March 16, 1916, of a new circular on cancer of the breast. The practice of midwifery in England and Wales is controlled by this Board and the circular is the newest of a series issued for the instruction of all women practising this profession and registered with the Board as required by the law. The leaflet on cancer of the breast was prepared by the Chairman, Dr. F. H. Champneys, F. R. C. P., and is distributed to the public as well as to midwives.

Pointing out that cancer of the breast, unless treated by early removal always ends in death, Doctor Champneys states that the disease is at first only in the part affected and not in the system. "Every day and even every minute," the circular says, "is of importance and no time at all should be lost. The earliest symptom is a lump in the breast which is usually painless and may be quite small. It may remain without seeming to grow for some time. The only cure for it is early removal. Although it is often easy to be sure that a lump is cancerous, many lumps which begin by being innocent turn into cancer some times after many years."

Doctor Champneys advises that all lumps except those caused by undoubted and recent inflammation should be removed as soon as they are found and advises all women who discover a lump in the breast to consult at once a surgeon who is in the habit of dealing with them. If the lumps are not removed and are cancerous the disease sooner or later spreads through the body and becomes incurable, while if the lumps are not cancerous they may become so. "The removal of an early lump," the leaflet goes on to say, "is generally simple and if microscopic examination should show afterward that it was not cancerous a danger for the future will have been averted and the anxiety of the patient and her friends will be relieved." From such an operation there is generally "practically painless recovery in a few days. If the lump proves to be cancerous, however, a further operation is necessary, which, if undertaken early, saves many lives."

According to Doctor Champneys, if women would follow the above advice much loss of life, many regrets when too late, and much misery would be saved.

LIVE A LITTLE LONGER: THE TRIPLE ALLIANCE BETWEEN THE PUBLIC, THE PHYSICIAN AND THE SCHOOL.

Miss Melissa E. Bingeman,

Secretary, Live a Little Longer, Committee, Rochester Chamber of Commerce.

Read before a General Session of the American Public Health Association, Rochester, N. Y., September 10, 1915.

THE platform upon which I stand cannot be overcrowded, even though it supports everyone present, as I assume is the case today. Please take a look at the planks which compose it. There are just three. Fitted together in a design known as the "syllogism" they form a "safe and sane" platform; a platform not to reason about, but from.

First.—In order to reduce any physical ailment to a minimum, the persons in a position to control or effect it must know its cause and how to combat it.

Second.—In a large proportion of cases the layman is in a position to combat disease, and in the majority of ailments he is the one upon whom prevention depends.

Third.—Therefore the layman should possess this knowledge.

By "layman" I mean not only the individual, but groups of individuals; the family, the community, in a word, the public.

A brief examination will show how reliable these planks are: "To reduce any ailment those in a position to effect it must know its cause and how to combat it." They must know its cause, in order to intelligently prevent. They must know how to combat it, in order to help bring about the speediest and most permanent cure, in the greatest possible number of cases, with the least possible ill effects.

The reason some diseases are decreasing is that their cause, or method of transmission is known, and can, therefore, be avoided; the plague, yellow fever and malaria are among these. The reason others are on the decrease is that methods of successfully combating them have been found; among these are typhoid fever and malaria. And the reason still others are at a standstill, or on the increase, is that neither their cause nor a successful method of fighting them is known; most prevalent among these is cancer.

In short, the difference between preventing and not preventing; between curing and not curing, is largely the difference between knowing and not knowing. While we recognize that many original causes of sickness are beyond human control, such as sudden change of weather, for example, even in these the knowledge of how they affect us can be applied so as to avoid some of the undesirable affects.

The first plank, then, amounts to this, that to reduce sickness the necessary knowledge must be in the hands

of those in a position to apply it. And the second, that the layman is in a position to apply it, is equally unassailable. No matter to how great an extent recovery depends upon medical skill, it depends also upon the physical resources of the patient. And this depends in considerable measure upon what the patient himself, or some other person or persons, the patient's parents or children, husband or wife, employer or employees, the local governing body or the community of which he is a part, has known or not known at some time in the past.

But besides this indirect influence of the layman's knowledge upon the patient's physical condition, which condition may determine his chances for recovery, there is a more direct, or at least more palpable influence. In all slight ailments in which the physician is not called, and in the first stages of more serious sickness, before the physician is in attendance, the ignorance of some layman may reduce the patient's chances for recovery, or induce complications which might have been avoided; while on the other hand, the layman's knowledge may reduce suffering or induce recovery.

It is estimated that not over one tenth of the average general practitioner's patients are bed-ridden; and that at least 50 per cent. are up and about their business; and in the great majority of the latter class, what the patient himself knows or doesn't know affects his ailment for better or worse. Also, because the preliminary stages of diseases vary, so that while some may become serious in fifteen minutes, others may not appear serious in fifteen years, there is great opportunity for the layman to work mischief with his ignorance.

So far as prevention goes, it is only necessary to look down the list of the most prevalent of what are known as preventable diseases to realize how largely prevention rests with the layman: in practically all infectious diseases and in all diseases induced by incorrect living. The beneficial results of educating the public are seen from our experience with the plague, yellow fever and malaria, tuberculosis and typhoid fever, which have decreased as the layman's knowledge of their cause and treatment has increased.

The practising doctor and nurse, indeed, have no opportunity to apply their knowledge until the mischief is done. They are the fire department, called in from the outside when the fire is making headway. They have had no opportunity to fireproof the building, to install sprinkler systems or to build fire-escapes. That is the duty of the layman.

Fearing to place health knowledge in the hands of laymen, lest they use it unwisely, fearing that knowledge may be dangerous, is on a par with fearing to use these means of safeguarding people against fire. The erection of fire-escapes is not opposed on the ground that people might use them when there is no occasion, and fall. People might do that, but, being intelligent, they don't. We do, however, safeguard the use of the safeguards. Fire-escapes must be accessible, and built of fire-proof material. They must be strong, with steps close enough together, and connected. We

do not tolerate gaps, nor consider a building equipped with fire-escapes if it has a short length of wooden ladder hanging out of a tenth-story window on one side, and another short length hanging out of a fifth-story window on another side.

And, just as we protect people against an unwarranted dependence upon fire safeguards, by making these as dependable as possible, so we should protect them against an unwarranted dependence upon disease safeguards, one of which is their own knowledge, by making this as dependable as possible. And the first thing that needs to be done is to see that the information given the public is reliable, the second that it is easily accessible, and the third that it is well-balanced.

The question is no longer Should the public know how to prevent sickness and how to care for the sick and injured? but What should the public know about this? not Shall the layman be instructed? but Who shall be responsible for instructing him? How, when, where, by whom, and at whose expense shall he be instructed?

The choice rests no longer between the horns of a dilemma—the "frying pan or the fire"; between the dangers of ignorance, on the one hand, and the dangers of a scant supply of unreliable, disconnected information on the other. There is a possible third choice. We can choose a balanced supply of reliable information.

In Rochester we are trying to make this way out of the dilemma so attractive that every woman in the city will choose it. And this is our method: To give every woman in the city the opportunity to take a course of health lessons in the school nearest her own home, at a time convenient for her.

This is known as the *Live a Little Longer* plan, a name applied first as a slogan by School Commissioner J. Warrant Castleman, and does not mean that we want to add to the years of the centenarian, but that we want to increase the average length of life.

The plan is really a triple alliance between the public, the physician and the school. For what it proposes is not merely the occasional or intermittent use of the school buildings in which to instruct the adult layman in matters of health, but to make the utilizing of the schools for this purpose permanent. It caters to the modern craving for efficiency by making use of a by-product of our educational system, idle school room; and, by substituting a straight road to the coveted goal of public health education for the devious path which has hitherto been our only means of approach, it makes one wonder that we have so long been satisfied with the roundabout way. If we really want accessible, balanced and trustworthy information, why have we not made it someone's business to supply it?

In Rochester the Board of Education stepped into the breach; which is as it ought to be. For this body is appointed by the people to manage local public education; is qualified for the task, and is entrusted with the funds appropriated for the purpose. The Board of Education took this

position: "Rochester schools claim to teach whatever has educational value, for which there is a demand. In health education there is undoubted educational value, but there has been no demand. Should this arise there is no reason why it should not be met."

The demand arose, and was brought to the attention of the Board in the form of a petition signed by almost three thousand women. This petition said: "Desiring to do our part in raising the average of health, efficiency and length of life, we, the undersigned, petition that there be furnished instruction in physiology, hygiene, disease-symptoms, dietetics, nursing and first aid at such hours as women could best take advantage of it; so that every woman in this city shall have the opportunity of gaining this most necessary information."

In response to this petition the Board of Education arranged a course of health lessons, which has now been given six times; as an afternoon course, from four to five o'clock, in five schools; and as an evening course has been given eight times in one up to time of printing. That women who are not employed outside of the home during the day find it a great deal more convenient to attend in the afternoon is evident. For, while in the evening class only 7 per cent. of the class were married, in all the afternoon classes from 60 to 90 per cent. were married.

The course consists at present of two lessons a week, for six weeks. As first offered it was composed of twenty-four lessons; and it may again be increased to include at least fourteen. One lesson a week is taught by the physician, and the other by a trained nurse. Alternating the teachers makes it necessary to take precautions not to duplicate, nor yet to omit any essential.

The actual value of such health lessons depends, naturally, upon what is taught. And it is precisely here that the strength of this plan lies. Among the lessons taught by the doctor are: Physiology; cause, recognition and prevention of disease; rational principles for the cure of disease; diseases of children; emergency aid; motherhood. While among those taught by the nurse are: Care of infants and children; home nursing, which includes care of the patient and of the room, observing, recording and reporting symptoms; use and care of sick-room appliances; following the doctor's instructions in the administering of medicines; dietetics; bandaging, and so forth.

You see the course does not pay more attention to persons of one age than of another; that it is aimed equally at those diseases that reduce the population in an efficient, business-like manner; at those that do the damage but escape the blame, since they are not shown up in the census reports as responsible for many deaths, making other diseases serve as scapegoats; and at those degenerative diseases that take their toll of men and women who should be in their prime.

Teaching is preferable to lecturing, as its attendant asking of questions on the part of pupil and teacher reduces formality and increases the interest. But the features which undoubtedly do more than any others

to hold the interest of the class, and to help them to assimilate the information, are the illustrations, demonstrations and practice. For in oral instruction, with the facilities of the school at hand, it is possible to call in all these aids.

In physiology there can be the big folding manikin of the body. In emergencies, the class is shown how to improvise and apply splints and slings; how to bandage the various parts of the body; how to put out fire in a person's clothing. In nursing they are shown how to make and use swabs, pads, poultices and all kinds of local applications; how to give the various kinds of baths and rubs; how to make a bed both with and without the patient in it; how to change the patient's position, and in other ways make him as comfortable as possible, moving him with the minimum of exertion on the part of patient and nurse. In dietetics they are shown how to cook broths, beef-tea, starches and other dishes for the sick. And whenever possible these things are practised in class, the members using each other as subjects in the taking of pulse and temperature, or in bandaging; while they use the demonstration material in cooking and bed-making.

Many a thing which otherwise could be learned only by experimenting blindly upon a sufferer, or which could not be learned at all, without someone to show us, can be learned in these lessons. And this is but the beginning. The plan can be developed and improved as we learn from experience how to put into each lesson the maximum of instruction and interest. There is no predicting how valuable such a course can in time be made. Ten years from now it may compare with the course being offered in Rochester this year as the automobiles of today compare with those of a decade ago.

The terms, in Rochester, have been a deposit of one dollar when the pupil registers at the beginning of the course; which dollar is returned at its close to all who have attended 80 per cent of the lessons. This helps to sustain the attendance. In three of the six courses given up to date, the dollar was returned to every member of the class. It is permissible to attend one lesson without making the deposit; and any member can bring a visitor, so long as the same person is not brought twice. The attendance of both pupils and visitors is, of course, taken at each lesson.

As to the size of the classes; this has run from one hundred and five, when the course was given in the East High School, which is situated in one of the best residential sections of the city, and which, as it was the first course offered, and more or less of an experiment, was permitted to draw attendance from anywhere in the city, down to about a dozen when the course was given in a school the surrounding population of which was largely foreign, many of the women in the neighborhood not being able to speak or understand English. When the course was, afterwards, given in this school in the evening, nearly thirty registered, and no better attendance or greater enthusiasm was met anywhere.

These classes, as can be expected, are always drawn from among the most intelligent persons in any community; as the more intelligent a person is, the more does he value knowledge, and the more promptly will he grasp such an opportunity. It takes longer to interest some people than others in anything educational; but if the opportunity is continued long enough the least interested will, in time, see its value.

There is no question that in a class numbering from fifteen to thirty the pupils are apt to receive more benefit in the same time than do the members of a larger class, since seeing is as important as hearing, and doing is as important as either. The expense is relatively greater with the smaller class—likewise the benefit; so it is left for the Board of Education to strike the balance. A class can easily be divided if it is considered too large.

A fifteen or twenty—even a twenty-four lesson course—can be repeated three times a year; while a twelve-lesson, which is a six weeks' course, can be repeated five times a year. In any case as many as desired can run concurrently. With four running at the same time, averaging thirty to a class, and repeating the course three times a year, three hundred and sixty women would receive the instruction annually, at an expense to the community of about $1,400, or approximately three dollars per pupil, if the teachers are paid, as in Rochester, by the lesson. But the physician and the nurse could each teach a lesson every afternoon, and two evening classes a week, thus instructing eight classes simultaneously. In this way, with forty in a class, and repeating the course five times a year, two teachers could give this instruction to sixteen hundred women a year. And this would cost in the neighborhood of $4,000, or less than two dollars and fifty cents per pupil, if the teachers are employed by the year. When not teaching they could be engaged in other ways for the Board of Education.

The money which furnishes health education, however, would otherwise remain neither in the public treasury nor in someone's pocket. It is money which, unless we pay it voluntarily and directly to teach people how to reduce sickness, we pay involuntarily and indirectly in decreased efficiency and needless loss of life. According to the estimate made by President Roosevelt's Conservation Commission, that two thirds of present-day deaths are preventable—or postponable—there are, in a city of this size, about one thousand preventable deaths annually. Money paid to reduce this loss is not an expense, but an investment. Moreover, the amount concerned is negligible. To instruct sixteen hundred women a year, according to the schedule outlined, would cost the community less than one dollar out of every thousand collected in city taxes. It does not require an abnormally elastic imagination to conceive of less profitable methods of spending public funds.

Knowing that no matter how practical or how practicable this plan, or how valuable the subject-matter of the lessons, poor teaching could sign its death-warrant, I sent to twenty hospital superintendents and twenty uni-

versities, questionnaires designed to ascertain whether these sources could be relied upon to find and prepare teachers, should a demand for such teachers arise. The one sent to hospital superintendents asked whether they would coöperate in finding among their graduates those qualified by education and temperament to teach; and the one to universities inquired whether they would, in case of a demand, offer pedagogical courses to fit such doctors and nurses to teach.

I was convinced that among the 100,000 trained nurses, and the 140,000 practising physicians in this country, there was no lack of good material; and equally convinced that the best potential teacher becomes a better actual teacher for having some pedagogical training.

Not one negative reply was received from a hospital superintendent; and among those that answered in the affirmative were the superintendents of the Post Graduate, the New York and the Presbyterian Hospital training schools, of New York City; the New England, of Boston; the Lakeside of Cleveland, the University Hospital of Philadelphia and St. Luke's of San Francisco. There is every indication that the hearty coöperation received in Rochester, from the superintendent of the Rochester General, would be the rule.

The second questionnaire, that to universities, brought affirmative replies, among others, from the George Washington University, of Washington, D. C.; and the state universities of Michigan, Wisconsin and Minnesota. Teachers' College of Columbia University, as you probably know, has now for several years offered a pedagogical course to trained nurses. The replies certainly showed that the question of teachers would prove no obstacle to the general adoption of the plan.

Nor would its adoption diminish in any way the service to the public of "Printers' Ink." Just as the fingers and ears of a blind man must substitute for sight, so printers' ink has, in this, had to fulfil its own function and that of the public schools as well. And, just as fingers and ears cannot be a perfect substitute for sight, no matter how perfectly they do their own work, so printers' ink cannot be a perfect substitute for oral instruction. "These things ought ye to have done and not to have left the others undone." The effect of taking such a demonstrated course of oral instruction is to increase one's avidity for health knowledge; it stimulates one's interest in all public health activities; consequently the printed word has not only a larger and more deeply interested, but also a more intelligently interested audience.

Incidentally, this opens an additional avenue through which state and local health departments can get their educational matter "across." While it is the function of departments of education to control the use of the schools, to engage and pay the teachers, and to supervise the teaching, in health matters as in other subjects, departments of health are in a position to induce school boards to offer health education. And no more effective method could be found than the coöp-

eration of the health department. This could be exercised in various ways: helping to prepare the lessons and find the teachers; preparing or furnishing charts and other demonstration material; and influencing people to attend the courses. The last-named is particularly essential, since school boards are not in a position to use school funds to advertise their activities. In Rochester not only the health officer endorsed the plan and coöperated with the Department of Education, but also the Woman's Educational and Industrial Union, the Chamber of Commerce, the Life Underwriters, Union Ministerial Association, Rochester Public Health Association, Rochester Medical Society, a federation of all the medical associations in the city, the Central Trades and Labor Council, Newswriters Club, Public Library Association, Rochester Motion Picture Managers Association, Rochester District Osteopathic Society, and others.

A *Live a Little Longer* General Committee was formed, with the one duty of bringing these health courses to the attention of the Rochester public, and keeping them before the public in such a way as to make people want to attend. This General Committee is built on the plan suggested by Professor Winslow for a Central Health Council, insofar, at least, as it is composed only of representatives from other organizations. The methods of this Committee are described in an appendix to a pamphlet, entitled "Live A Little Longer—The Rochester Plan," published by the Association of Life Insurance Presidents, copies of which can be had, from them, upon request.

This "triple alliance" between the educational forces, the health forces and the public, is not only in theory but in practice feasible, efficient and effective. It tacitly admits the responsibility of the community to furnish health education for its citizens, recognizing that *we cannot limit the effects of ignorance to the ignorant*, but that the whole community profits from the education of the individual and suffers from his lack of knowledge. It furnishes a broad, well-balanced basis of health education, not being aimed at any particular disease, or against the diseases of any particular age, class or locality, although it can, when considered wise, be so aimed. It makes this information more interesting, and therefore more easily remembered, than is possible in any other than oral instruction, while the demonstrations and practice help the pupils to assimilate it. It keeps a record of who is taking advantage of this instruction, and keeps them in attendance throughout the whole course. It is designed to enlist and coördinate all existing local institutions and organizations that are in a position to interest even a fraction of the public in public health.

Unless it had been thought that this plan might possibly, with profit, be followed by other communities, it would probably not have been placed upon this program. If Rochester is correct in believing that a community owes it to itself to furnish health education for its citizens, then this responsibility rests upon every com-

munity. Therefore I suggest that there be added to the platform with which we began, these three planks:

First.—Every community owes it to itself to adopt an efficient plan of health education;

Second.—The *Live a Little Longer* plan is an efficient system;

Third.—Therefore every community owes it to itself to adopt this, or some equally efficient system.

◆

NEW METHOD OF MAKING ANTI-HOG-CHOLERA SERUM.

A new method of preparing anti-hog-cholera serum, which permits the economical production of a clear sterilized product, has just been described in the *Journal of Agricultural Research* of the U. S. Department of Agriculture. The advantage claimed for the new method is that it makes possible the production of an anti-hog-cholera serum which can be quickly sterilized by heat to a point that will absolutely kill any germs of foot-and-mouth disease and so yield a serum that is absolutely safe even if taken from a hog which might harbor foot-and-mouth disease and yet give no indication of being infected.

The method, as described by its discoverers, Dr. Marion Dorset and R. R. Henley, of the Biochemic Division, Bureau of Animal Industry, consists in adding a slight amount of an extract from ordinary white navy beans to the defibrinated hog-cholera-immune blood which has been the form of the serum used in the past. The addition of this bean extract causes the red cells of the blood to agglutinate and when the mixture is whirled on a centrifuge the red cells pack together and form a rather stiff jelly-like mass. It is then possible to pour off a clear serum, leaving behind the red cells which play no part in preventing hog cholera and which in fact simply tend to dilute the serum and render its sterilization by heat impracticable. To increase the yield of clear serum the discoverers added a small amount of ordinary salt and found that they obtained from 70 to 74 per cent. of clear serum. The clear serum thus obtained it was found could be heated for 30 minutes at a temperature of 60 degrees C. without changing its consistency or lessening in any way its effectiveness in preventing hog cholera. The heating to this point for this time is more than sufficient to kill any germs of foot-and-mouth disease which might accidentally be present. Practical tests with hogs show that probably all of the antibodies useful in combating hog cholera were retained in the serum and the red cells extracted contained so few, if any, of these valuable bodies as to make the residue of red cells useless in preventing the disease.

Before the clear serum was developed, many attempts were made to sterilize by heat in a practicable way the ordinary defibrinated blood. It was found, however, that heating the old product up to 60 degrees C. resulted in more or less complete coagulation of the defibrinated blood and in the destruction of the serum so far as its commercial worth is concerned. It was found that the highest temperature that could be used was 50 degrees C. and it was necessary to keep the old serum at this temperature for 12 hours to make certain that the virus of foot-and-mouth disease was killed. Heating serum at a steady temperature over this long period in ordinary practice is difficult and too expensive.

Attempts also were made to make a clear serum by centrifugalizing. It was found, however, that while the centrifuge would separate to some extent the red cells, they were in such shape that it was difficult to separate the serum completely. An important quantity of antibodies were left behind in the red clot, and the resulting product was a cloudy rather than a clear serum. With this process, moreover, it was possible ordinarily to secure only about 50 per cent. of serum. Under the new method it is possible to secure as high as 74 per cent. of clear serum, which in actual test has proved to be fully potent. This clear serum, moreover, can be completely sterilized in 30 minutes, whereas the old serum had to be heated steadily for 12 hours.

The new form of serum, as far as the Department knows, is not yet being made or put on sale by the commercial serum laboratories. As this process was discovered by the federal government, any one in the United States is free to use it.

INOCULATION AGAINST TYPHOID IN MARYLAND.

F. W. Hachtel, M. D., and H. W. Stoner, M. D.,
Baltimore, Md.

From the Bacteriological Laboratories of the State and City Boards of Health.
Read before the Laboratory Section of the American Public Health Association, Rochester, N. Y., September, 1915.

We can scarcely understand why certain sections of the lay mind still look with horror upon inoculation, in spite of the many proofs of its efficacy. This excellent paper, in which is discussed the attack-rate among inoculated persons, adds to the proof, if proof be needed, a convincing argument.

WE SHOULD be somewhat averse from again presenting a paper upon this subject were it not that we have recently been able to obtain statistics showing the attack-rate among persons who have been inoculated with anti-typhoid vaccine prepared and distributed by the state and city departments of health.

Since early in 1910 the two departments have given out 17,651 complete immunizing doses of antityphoid vaccine; this figure includes persons who have been immunized up to July of the present year. The following table will show in detail the general distribution of the vaccine.

TABLE 1.

Peninsula Hospital, Salisbury	20
St. Agnes Hospital, Baltimore	46
Western Maryland Hospital, Cumberland	4
Sydenham Hospital, Baltimore	20
Municipal Tuberculosis Hospital, Baltimore	10
Johns Hopkins Hospital, Baltimore	400
St. Joseph's Hospital, Baltimore	110
Maryland General Hospital, Baltimore	134
Union Protestant Infirmary, Baltimore	88
Mercy Hospital, Baltimore	293
Franklin Square Hospital, Baltimore	77
University Hospital, Baltimore	327
Hospital for Women of Maryland, Baltimore	9
Hebrew Hospital, Baltimore	100
Church Home and Infirmary, Baltimore	176
Hahnemann Hospital, Baltimore	11
Allegheny County Home, Cumberland	200
Crownsville State Hospital, Crownsville	200
Industrial Home for Colored Girls, Melvale	110
Maryland House of Correction, Jessups	850
Springfield State Hospital, Sykesville	2,531
Spring Grove State Hospital, Catonsville	664
Bay View Hospital, Baltimore	957
Maryland Naval Militia	75
Maryland National Guard	495
United States Government Testing Station, Indian Head	700
W. Va. Paper Pulp Company, Luke	1,300
Maryland Agricultural College, College Park	40
Westernport, Maryland	197
Indian Head, Maryland	30
Frostburg, Maryland	250
Crisfield, Maryland	125
Baltimore, Maryland	1,598
Citizens of towns and rural districts	5,504
Total	17,651

From the above table we find that we have inoculated 1,825 physicians, nurses and students connected with various hospitals; 5,512 inmates of, and attendants at, different institutions; 570 members of the Maryland

National Guard and Maryland Naval Militia; 2,000 employees of industrial plants, and 7,744 of the general population.

Of the 1,825 persons included in the first group, 1,732 have been immunized for a period of from one to five years; one of these, a nurse in a hospital in one of the counties of Maryland, developed enteric fever within one year after inoculation; this gives an attack-rate of 5.7 for vaccinated physicians, nurses and students living in these hospitals. In a former article* the authors showed that the typhoid morbidity for this group in six Baltimore hospitals for the five years preceding the adoption of antityphoid vaccination was about 500 per 10,000. This remarkable reduction in the attack-rate needs no comment.

Of the second group, 5,055 have been immunized for from one to five years. Three of these have since developed typhoid fever; one within a period of one year, another after twenty-one months, and the third after thirty-nine months. This gives an attack-rate of 5.8 per 10,000 for the vaccinated inmates of these institutions. The typhoid morbidity for these institutions as a whole had ranged from 50 to 200 per 10,000 a year prior to the adoption of prophylactic inoculation. It will be noted that the third case was attacked thirty-nine months after immunization. This man was inoculated in June, 1911, with three doses of vaccine containing 125,000,000, 250,000,000 and 500,000,000 dead organisms per cubic centimeter respectively, small doses as compared with those used at present. While this case was rather severe, it was of short duration, as the fever subsided to normal on the nineteenth day.

Cases 1 and 2 occurred in an institution with about 1,200 inmates, in which, previous to the introduction of prophylactic immunization, the attack-rate was 100 to 200 per 10,000 a year. In the four years since immunization has been adopted, there have been five cases of typhoid fever in the institution; the two just cited, two in individuals who gave a history of having previously had typhoid, and who, therefore, were not immunized, and one in an attendant who refused to be vaccinated. These three latter cases indicate that the source or sources of the previous infections were still present after preventive inoculation had been introduced. In another institution, an insane asylum, there had been ten cases of enteric fever in a total population of 410 immediately before antityphoid vaccination was started, while in another, a penal institution, twenty of the 400 prisoners were suffering from typhoid fever at the time prophylactic inoculations were begun. In both of these epidemics no new cases developed after the use of the vaccine.

We have been unable to collect complete reports concerning the inoculation of the Maryland National Guard and the Maryland Naval Militia. However, from 2,000 to 3,000 men have submitted to antityphoid vaccination, of which number 570 were inoculated with vaccine prepared by the state or the city department of health. All of these men have been inoculated for a period of from one to

*Hachtel and Stoner, *Jour. Amer. Med. Assoc.*, 1912, LIX, p. 1364.

five years, and none have since developed enteric fever. Before the inoculation of the state troops was started, almost every year cases of typhoid occurred in the regiments after returning from camp, while the year immediately preceding the beginning of immunization there was an epidemic among the men of the different regiments.

Of the 9,744 persons included in groups four and five, 1,598, representing citizens of Baltimore, have to be subtracted, since we have been unable to obtain any information concerning these. Of the remaining 8,146, 7,733 have been inoculated from one to five years. Of this number, six developed enteric fever, giving an attack-rate of 7.75 per 10,000 among the inoculated. One of these became infected within four months after immunization, two within seven months, one within eight months, and two after an unknown period. All six of these people lived in a town in which, at the time, enteric fever was epidemic, and in which about 1,500 people had been inoculated with vaccine from the two departments.

In the above six cases we have included one which ran a mild course of one week's duration, and which the physician in charge did not feel sure was an attack of typhoid fever. In addition to these a case of typhoid fever occurred so soon after the completion of the inoculations that the physician administering the vaccine feels certain that the child was developing the disease during the time he was vaccinating him. We have also the report of an attack of enteric fever in a girl who had received but two doses of the vaccine.

In the same town in which the six cases lived who developed enteric fever after immunization with the department's vaccine, two other persons who had been injected with vaccine prepared, in the one case, in a well known biological laboratory, and in the other at the laboratory of the Medical Service of the army, contracted the disease. We have not included these in computing the attack-rate among immunized persons, since we have no idea of the number of citizens who have been immunized with other vaccine than that prepared at the joint laboratories of the state and city health departments.

The reports from various physicians throughout the state are very similar in character, in that families in which there were one or more cases of typhoid were immunized immediately and that in most instances no infection occurred among the inoculated. In one family in which three children were suffering from enteric fever, four other children and the parents were vaccinated, but one of the children developed the disease before the second dose of vaccine was given. This child was evidently in the incubation stage of the disease at the time the first dose of vaccine was administered. In another family of nine members, eight received the vaccine, but one who was not immunized developed typhoid and died. In the town of Frostburg, Md., a certain section had been showing a gradually increasing typhoid attack-rate each year. In 1912, 250 residents of this section were immunized, and up to the present time—over three years—there has been but one case in

this portion of the town, and that occurred in a man who had refused to be immunized. It must be noted that there has been no improvement in the sanitary condition of that section of Frostburg.

Over 500 employees at the United States Government Testing Station at Indian Head, Maryland, and civilians in the vicinity have been vaccinated and no cases of typhoid fever have developed within one year. Doctor Kress, the physician on duty at the station, states that "in the past the place has been a veritable hot-bed of typhoid fever." There has been no marked improvement in sanitary conditions since the inoculations were made.

From the above we see that 14,795 residents of the state of Maryland have been inoculated from one to five years with typhoid vaccine distributed by either the state or city boards of health and but ten of these have since had enteric fever, which gives an attack rate of 6.75 per 10,000 persons. This morbidity among the inoculated is higher than that reported by Russell* for the army, which for the five years 1909–1913 was about 2.0 per 10,000, but this is quite natural since, in the first place, the number of immunized citizens is smaller than the number of immunized soldiers, in the second, Maryland's attack-rate is high, in the third, the figures on which we base our calculations include six persons residing in a town whose water-supply was highly polluted, and in which the infection was not only very widespread but also very virulent, and in the fourth place, the greater number of our cases are included in Group I, members of families in which the disease is present and individuals exposed to epidemics, in all of which the chances of infection are much greater than in the army.

In contrast to the aforementioned morbidity among the immunized, the attack-rate for the state of Maryland for a similar period (5 years) was 33.30 per 10,000.† The attack-rate for the whole registration area of the United States for 1912 was 16.5 per 10,000.

In summarizing we call attention to the following points: First, to the striking difference in the typhoid attack-rate among immunized nurses, physicians and students residing in hospitals and that for the same class before immunization; that is, it formerly was 87.7 times as great as it is at this time. Secondly, to the fact that enteric fever was from 8.4 to 33.9 times as prevalent in institutions before, as it has been since inoculation. Thirdly, to the difference between the attack-rate for the state (33.30 per 10,000) and that for the inoculated inhabitants (6.75 per 10,000).

For much of the statistical data we are indebted to Dr. R. H. Riley, Deputy State Health Officer of Maryland, to whom we extend our heartiest appreciation for his assistance. We are also indebted to Dr. Kenneth B. Jones, who was resident superintendent of one of the institutions at the time, for some of the information.

* Russell. *Jour. Amer. Med. Assoc.*, Jour. Amer. Med. Assoc., 1914, LXII, p. 1371.

† As the report of cases of typhoid fever in Maryland is not complete, the figures are estimated from the reported deaths on the basis of a 10 per cent. fatality.

ONE YEAR'S EXPERIENCE WITH THE NEW MODEL VITAL STATISTICS LAW IN SOUTH CAROLINA.

JAMES A. HAYNE, M. D.,
Secretary South Carolina State Board of Health.

Read before the Vital Statistics Section, American Public Health Association, Rochester, N. Y., September 9, 1915.

MR. PRESIDENT and Gentlemen of this Section: I feel that I am a very tyro, and also presumptive in coming before this body of men experienced as they are in the obtaining of vital statistics, and interpreting the data obtained from such records. My only excuse is, that I was asked to do so, and that the title of the paper was furnished to me. Strictly speaking, we have had only eight months of vital statistics in South Carolina for, although the Model Law was passed in March, 1914, it was not signed by Gov. Coleman L. Blease until September, 1914.

The original bill as passed by the legislature was adopted by Dr. Cressy L. Wilbur, who took much interest in its passage and came to Columbia while the legislature was in session and also called on the Governor and urged the passage of the bill. The Act reads as follows:

An Act To Provide For The Registration Of All Births And Deaths In The State Of South Carolina. (Passed by the General Assembly, March, 1914.) (Signed by the Governor, September 1, 1914.)

SECTION 1. Be it enacted by the General Assembly of the State of South Carolina, that the State Board of Health shall establish a Bureau of Vital Statistics, and provide an adequate system for the registration of births and deaths, by formulating, promulgating and enforcing rules and regulations prescribing the method and form of making such registration.

SECTION 2. That the Secretary of the State Board of Health shall be the State Registrar of Vital Statistics, and it shall be his duty to carry into effect the rules, regulations and orders of the State Board of Health. The Board shall provide suitable apartments, properly equipped with fire proof vaults and filing cases, for the permanent preservation of all official records.

SECTION 3. That for the purpose of the Act, the State Registrar shall divide the State into Registration Districts, defining and designating the boundaries thereof, and appointing Local Registrars in each district.

SECTION 4. That each Local Registrar shall be paid the sum of twenty-five cents for each birth certificate and each death certificate properly and completely made out and registered with him, correctly recorded and properly returned by him to the State Registrar, as required by the rules and regulations. And in case no births or no deaths were registered during any month, the Local Registrar shall be

entitled to be paid the sum of twenty-five cents for each report to that effect, but only if promptly made in accordance with the rules and regulations. All accounts payable to a Registrar under the provisions of this section shall be paid by the Treasurer of the County in which the Registration district is located, upon certification by the State Registrar. And the State Registrar shall annually certify to the Treasurers of the several Counties the number of births and deaths properly registered, with the names of the Local Registrars, and the amount due each at the rates fixed herein.

SECTION 5. That the State Registrar shall, upon request, furnish any applicant a certified copy of the record of any birth or death registered under the provisions of this Act, for the making and *certification* of which he shall be entitled to a fee of fifty cents, to be paid by the applicant. And any such copy of the record of a birth or death, when properly certified by the State Registrar to be a true copy thereof, shall be prima facie evidence in all Courts and places of the facts therein stated. For any search of the files and records when no certified copy is made, the State Registrar shall be entitled to a fee of fifty cents for each hour or fractional part of an hour of time of search, to be paid by the applicant. And the State Registrar shall keep a true and correct account of all fees by him received under these provisions, and turn the same over to the State Treasurer each month.

SECTION 6. That any person, firm or corporation who shall violate any rule, regulation or order of the State Board of Health, relative to recording, reporting or filing information for the Bureau of Vital Statistics or who shall wilfully neglect or refuse to perform any necessary or reasonable duties imposed upon them by said orders, or who shall furnish false information for the purpose of making incorrect records for said Bureau, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than five dollars, nor more than one hundred dollars, or be imprisoned in the County jail not exceeding thirty days, or suffer both fine and punishment in the discretion of the Court.

SECTION 7. That all Laws and parts of Laws in conflict with the provisions of this Act, are hereby repealed; and no system for the registration of births and deaths shall be continued or maintained in any of the several municipalities of this State other than the one provided for and established by this Act.

SECTION 8. That this Act shall go into effect on July the first, nineteen hundred and fourteen.

Approved the first day of September, A. D. 1914.

(Signed)
COLEMAN LIVINGSTON BLEASE,
Governor.

It will be seen that the Act contains only eight sections and that the details are left to be worked out by the Executive Committee of the State Board of Health. This was the salvation of the bill, for where a busy legislature has to take up item by item a long bill such as the Model Bill as originally

drafted cannot be passed, for some member of the legislature will object and then the bill will be held up.

Year after year, since 1878, have we tried to have an adequate vital statistics law passed, and failed, simply because the legislature was luke-warm and did not care whether the law passed or not, and the bill itself was so long that it was side-tracked.

The Model Concise Law as enacted by South Carolina is recommended to other states. It can be passed, will meet with but little opposition and is adequate, covering all necessary points. The Regulations adopted by the Board were copied with but slight modification from the original Model Vital Statistics Law. After the passage of the law and its signature by the Governor, the next question that confronted us was the fact that the Act carried no appropriation. Fortunately, there was an extraordinary session of the legislature held in December, 1914, and we obtained the sum of fifteen hundred dollars with which to have blanks, etc., printed so that we could actually put the law in operation January 1, 1915. We had to send to each physician blanks for the reporting of births and deaths; to each undertaker, death certificates; and then came our most difficult task, viz., the appointment of local registrars. We thought we had solved the difficulty by appointing all the magistrates, except in the larger towns, but when the attorney-general ruled that magistrates were ineligible on account of a Constitutional provision that no man could hold two offices, we were again at sea. We then wrote to the clerks of court of each county and asked them to name a man in each township. In this way we secured many.

South Carolina is divided into counties and townships. Some counties have but a few large townships while other counties have as large as fifteen. In the large townships the local registrars are directed to appoint sub-registrars, who will report to them and be paid a fee by them. Their names must be furnished, however, to the state registrar, who will supply these sub-registrars with necessary blanks. In incorporated towns we usually have the secretary of the local board as the registrar. Fortunately the appointing power is left absolutely in the hands of the state registrar, so that appointment and removal is accomplished. A book of instructions is sent to each local registrar, to each practising physician and to each undertaker in the state, so that those most interested in the law are thoroughly informed as to its provisions, also a list of registrars is sent to each registrar, physician and undertaker, so that they know to whom to report births and deaths.

What Class of Citizens Make the Best Registrars?

This question we have too little experience to answer, but we believe from what we have observed that they must be good mixers, not contentious, preferably married, so that their wives or daughters can act as deputy registrars. The pay is so small that only very patriotic citizens will stick after appointment. Many will apply, simply because to the average American

citizen a job, and especially a government job, is always sought. The state registrar must by personal letters, frequently sent, make these local registrars feel the importance of their positions. He must praise them often and scold them as little as possible. The iron hand of the law must be well covered with the velvet of persuasion. Friendly rivalry must be excited between counties so that each will strive to be more nearly correct in their reports each month. Each registrar in a township must be informed monthly of the percentage of deaths he has reported, so that he will have some idea whether all are being reported to him. The use of colored maps, such as I will pass around, help to arouse interest, when shown at talks to the county medical societies, and thus the doctors become interested.

Lack of coöperation on the part of physicians is one of the great stumbling blocks. Doctors are busy men, usually autocratic; give directions to others, and are accustomed to obedience. They call no man master, especially the country physician, and they cannot be driven. However, they can be persuaded and I usually quote Doctor Charllé to them as follows: "Public hygiene derived its birth from, and depends for its future progress on vital statistics, and every argument which favors the establishment of boards of health is an argument for vital statistics. For while a board of health without them is as helpless as a man without eyes to guide him, so without vital statistics the public is destitute of the only valid test of the value of a board of health. If a human being is much more valuable to the state than is a bale of cotton, then statistics of the human crop would prove much more valuable than statistics of the cotton crop; and yet every newspaper can and does furnish statistics of the cotton crop, such as no man can now anywhere procure as to our human crop."

Vital statistics furnish unerring lessons as to health, prosperity and morals of the people; they teach the influence of marriage on illegitimacy and morality, the fecundity of a whole people and of the races thereof; the vital force of children; the duration of life with its expectations and values for all ages and races; the influence of meteorology, occupation, locality, in generating disease and improving health, and thereby the removal of unfavorable conditions, always found, where least expected, and the approach of morbific storms, by ignorance of which negligent cities, and even nations have been destroyed.

The only foundation of life insurance, vital statistics, alike serve to guide the resident and the emmigrant, the capitalist and the laborer, the politician and the statesman, the moralist and the scientist.

Ignored and disparaged by the average American legislator, vital statistics have been advocated and supported by Napoleon and Thiers, by Bismarck and Cavour, by Gladstone and Disraeli; and their establishment has become a test of the degree of civilization reached by a people and their rulers. Doctors who have proven their patriotism in war as well as in peace will not shrink from this small en-

croachment on their time, when their attention is properly drawn to the valuable results to the material prosperity of the state, which a proper registration of births and deaths would produce. I have found the undertakers easy to approach and willing to aid. Some of them have proved stiff-necked, but an appeal to the nearest magistrate soon brings them to a realizing sense of the situation. For undertakers are not as popular with the general public as are doctors, and juries are not at all hard to persuade as to their guilt, but a jury will not usually convict the family physician of a neighborhood, for fear, perhaps, that when he gets a chance, he may make it warm for them.

The Relation of the Federal Government to Vital Statistics.

I may be accused of being a backslider from the good old Democratic principles of states rights and local self-government, but I firmly believe that vital statistics, and the information obtained by them, belong to the United States government, and that this government should work out a universal plan for obtaining them, and, moreover, the most important idea of my belief is that all expenses necessary to obtain vital statistics should be borne by the United States government. There seems to be no criterion by which the government now judges whether a state is obtaining a true record of its births and deaths or not. States admitted to Registration Area show frequently a lower percentage of deaths per thousand than those refused admittance. Virginia was admitted on 14.2 per thousand, and South Carolina not admitted has a percentage of 15.7 per thousand. Now Virginia may have as low a death-rate as indicated by 14.2 but we have serious doubts. We believe 15.7 per cent. per thousand to be about 85 per cent. of South Carolina's actual death-rate, and we believe 25.2 to be about 80 per cent. of the birth-rate, and we are going to keep hammering until we are successful in getting at least 95 per cent. of both. I append some figures obtained (Annual death-rate for the State of South Carolina). I want to say that all these births and deaths are bound in volumes, numbered and card indexed. We are proud to say that we believe that the cost in our state of this work has been less than in any other state. We have spent for eight months' work out of an appropriation of $5,000, $3,026. Our office force consists of the following personnel:

		Salary.
J. A. Hayne,	State Registrar	None
C. W. Miller,	Chief Clerk	$1,200.00
	File Clerk	720.00
	Clerk half time	300.00
	Stenographer	600.00
	Typewriter	300.00

Total cost per month for salaries, $285.00, and with this expenditure we have received, tabulated and bound in the first seven months 14,920 deaths and 25,337 births, and I can say without conceit that I am proud of the record and do not believe it has ever been equaled.

ANNUAL DEATH RATE FOR THE STATE OF SOUTH CAROLINA.

Based upon Reports for Six Months, January–June, 1915.

Disease.	No. deaths.	Rate per 100,000.
Diseases of the circulation	1,274	158.4
Tuberculosis pulmonalis	1,138	141.5
Pneumonia, lobar	1,099	136.0
Diseases of the kidneys	815	101.3
Pellagra	682	84.8
Intestinal diseases	528	65.6
Dysentery	289	35.9
Cancer	269	33.4
Pneumonia, broncho	216	26.8
Typhoid fever	143	17.7
Whooping-cough	127	15.7
Malaria	105	13.0
Syphilis	73	9.0
Meningitis	46	5.7
Cerebro-spinal meningitis	37	4.6
Tuberculosis of the bowels	29	3.5
Tuberculosis, peritoneal	25	3.1
Diphtheria	22	2.7
Pleurisy	21	2.6
Tetanus	15	1.8
Tubercular meningitis	14	1.7
Pneumonia, hypostatic	14	1.7
Tubercular laryngitis	6	.7
Typhoid pneumonia	6	.7
Tuberculosis of the joints	5	.6
Erysipelas	5	.6
Dysentery, amœbic	4	.5
Scarlet fever	3	.4
Typhoid dysentery	3	.4
Measles	2	.2
Smallpox	2	.2
Scurvy	1	.1

Deaths for six months ending June 30, 1915	12,633
Births for six months ending June 30, 1915	21,892
Death-rate per 1,000 for year, based on reports for six months, Jan.–June, 1915	15.7
Birth-rate per 1,000 for year based on reports for six months, Jan.–June, 1915	27.2

	No.	Rate.
July Deaths	2,287	16.7
July Births	3,445	25.2

Respectfully submitted,
C. Wilson Miller,
Chief Clerk Vital Statistics.

White, Male.

Under 1 year	509
1 to 5	276
5 to 10	42
10 to 20	103
20 to 30	160
30 to 40	171
40 to 50	181
50 to 60	251
60 to 70	303
70 to 80	286
Over 80	124
Unknown	19
	2,425

White, Female.

Under 1 year	387
1 to 5	204
5 to 10	48
10 to 20	106
20 to 30	206
30 to 40	236
40 to 50	172
50 to 60	197
60 to 70	269
70 to 80	291
Over 80	187
Unknown	23
	2,326

Negro, Male.

Under 1 year	912
1 to 5	355
5 to 10	121
10 to 20	265
20 to 30	406
30 to 40	299
40 to 50	301
50 to 60	278
60 to 70	327
70 to 80	221
Over 80	136
Unknown	71
	3,692

NEGRO, FEMALE.

Under 1 year	813
1 to 5	260
5 to 10	112
10 to 20	354
20 to 30	626
30 to 40	442
40 to 50	343
50 to 60	266
60 to 70	285
70 to 80	200
Over 80	149
Unknown	55
	4,005

INDIAN, MALE.

Under 1 year	1
10 to 20	1
40 to 50	1
	3

INDIAN, FEMALE.

1 to 5	1

SCARLET FEVER.

L. I. Dublin, statistician of the Metropolitan Life Insurance Co., New York, reports in the *Journal A. M. A.*, May 27, 1916, the results of his investigation of 1,153 cases of scarlet fever with special reference to their sequelæ. The plan followed was to trace the condition of the survivors as far as possible through an interval of four or five years after recovery and to note especially the mortality from causes that might be considered as sequelæ of the primary disease. In case of typhoid fever he was able to show that in a series of 1,428 patients who had survived the attack of that disease the mortality during the three following years was twice as great as might have been expected from the age, sex and color of the group. This high mortality resulted from an increase in the number of deaths from tuberculosis and organic heart disease. In the present study the records of the Visiting Nurse Service of the Metropolitan Life Insurance Co. furnished the material wanted. Nearly 82 per cent. of all the cases were among children between 2 and 10. The greatest disposition to the disease is between the age of 3 to 7 years, and over 55 per cent. of the total were within these five years of life. The period from 11 to 15 presents an appreciable number of cases, but after this period the cases are few and far between. The figures in this respect agree with those found elsewhere. There were 90 deaths that occurred in the 1,153 cases and the highest mortality occurred nearest the second birthday. The ninety deaths showed complications in sixty-two cases. There were represented during the entire period subsequent to the attack, 3,583 years of life. That is, 1,063 persons were under observation for an average of 3.4 years. The expected number of deaths for this group of survivors was then calculated and the mortality rate actually experienced by the company for corresponding age, sex and color during the years covered by the study was used as a standard. According to this measure we had a right to expect 18.6 deaths, but the percentage was only 18. Instead of showing a higher mortality, as in the typhoid fever study, the actual mortality was 97 per cent. of the expectation. Three of the eighteen deaths showed a record of endocarditis on the death certificate which may reflect the impairment resulting from the scarlet fever. There were five deaths from respiratory diseases and four from tuberculosis. The remainder were scattered among a number of causes which have no particular significance. Oddly enough, there were no deaths from kidney diseases, and it would seem that impairments of the kidneys which are so common in scarlet fever are either severe enough to cause immediate death, or that in the survivors the injurious effect is not sufficiently great to kill within the next five years. It is possible that there may ultimately be an increase in the expected number of deaths from kidney diseases and he hopes to investigate this matter of the future. While the sequelæ do not appear to be an appreciable factor in the mortality of surviving children, the disease itself is an appreciable factor in children's mortality. The disease has not decreased in frequency of late years, as is the case of some other infective diseases. The most interesting facts indicated in the table of the mortality experience is the markedly lower mortality of the colored race. The death rate for colored children is about one fourth that of the whites. The seasonal incidence of scarlet fever is last noticed. From January the frequency of the disease rises rapidly to a maximum in May, and then there is a rapid drop to September, which gives a minimum. For the remainder of the year there is a rise of the curve, as shown in the chart given in the original paper.

AN ANALYSIS OF APPENDICITIS STATISTICS.

KNUD STOUMANN,
The Prudential Insurance Company of America.

Read before the Vital Statistics Section of the American Public Health Association, Rochester, N. Y., September 9, 1915.

WHEN Professor Reginald H. Fitz of Harvard in 1886 wrote his classic paper on "Perforating Inflammation of the Vermiform Appendix," the word *appendicitis* was used for the first time. The establishment by McBurney three years later of "McBurney's point," midway between the anterior superior spine of the ilium and the umbilicus, was probably the most important event in the development of the diagnosis of appendicitis. Although surgeons in the two previous centuries more and more frequently demonstrated perforative abscesses in the appendix vermiformis, it was not until the two last decades of the nineteenth century that this disease was thoroughly explored. The intense interest caused by these discoveries is best seen in a paper by Dr. George M. Edebohls in 1899 in which he states that he had read twenty-five hundred articles and books on appendicitis. No other abdominal operations are now so common as removal of or incision in the appendix vermiformis. In spite of this, however, no one has as yet to any great extent utilized the official mortality statistics of the several countries to further their own investigations. The explanation probably is that the general knowledge of this disease is so new that a complete registration of the deaths caused by appendicitis has not as yet, or only recently, been attained.

The registration report of Massachusetts gave the deaths from appendicitis for the first time in 1896; the Registrar-General of England and Wales introduced appendicitis as a separate group in 1901. In Norway registration of deaths from appendicitis began in 1896; in the German Empire not before 1906. Naturally, it requires several years before a new classification takes full effect, and only gradually will deaths from appendicitis be transferred to this group; many deaths, in several countries, even now, being classified under other groups, especially under peritonitis. It is nowhere possible to use the data for much more than the last ten years, and even these must be used with caution. But in spite of the gradual accumulation, certain useful facts may be established by careful examination of the available data.

The following table gives the geographical incidence of appendicitis and peritonitis throughout the world. The most evident fact in this table is that the lower the death-rates from appendicitis the higher the rates from peritonitis. Bearing in mind that the majority of fatal cases of appendicitis terminate in peritonitis this should not

surprise us. Given on the death certificate two or more causes of death, it depends on the registrar whether the final or originating cause is to be considered the fact to be registered. Peritonitis is less and less accepted, without explanation, by registration officials as a cause of death. Of 79 cases in the United States registration area in 1911 in which the assignment was changed from peritonitis, 18 were added to appendicitis. Of 135 cases in Ireland in 1906, 22 were added to appendicitis. At the same time these inquiries must tend to make the physicians more careful and precise in stating the cause of death. Naturally, where the registration methods are so widely different as in the eighteen countries included in the above table, we must expect wide variations in the mortality on this account. Excluding Sweden, Germany and Japan, the correlation between the two columns of the above table is -0.5802 ± 0.1148. Considering the many other influences at work this must be considered indicative of a real inverse correlation. This fact, however, does not entirely explain the differences in the several countries. There is no doubt that the mortality from appendicitis is higher in this country than in England and Wales; higher in Switzerland than in Holland; but the reasons for these differences are not at all evident. There seems to be a certain tendency to higher rates where mountains or long distances make access to the hospitals difficult. Switzerland, United States, Ontario, New Zealand, Sweden and Scotland have high rates; Norway also, considering the high peritonitis rate; while England, Holland, Ireland and the German Empire have rather low death-rates from appendicitis.

MORTALITY FROM APPENDICITIS AND PERITONITIS (NOT PUERPERAL) IN THE PRINCIPAL COUNTRIES.

Country.	Period.	Death-rate per 1,000,000 population.	
		Appendicitis.	Peritonitis.
Switzerland	1907–1911	113.3	41.3
United States*	1908–1912	107.5	42.1
Ontario	1908–1912	98.1	66.2
New Zealand	1908–1912	84.6	61.6
Sweden	1911	81.8	†
Scotland	1908–1912	80.9	42.6
Australia	1908–1912	73.7	42.4
England and Wales	1908–1912	66.3	16.5
Norway	1908–1912	65.6	83.7
German Empire	1908–1912	60.3	†
Japan	1909–1911	38.4	368.7
Ireland	1908–1912	36.7	23.4
Cuba	1908–1912	35.3	42.8
Uruguay	1908–1912	28.6	98.9
Holland	1908–1912	24.9	85.4
Chile	1911–1912	19.7	84.9
Italy	1908–1912	19.5	101.5
Straits Settlements	1909–1913	10.6	123.8

* Registration states.
† No record.

A survey of the mortality from appendicitis in the cities of this country emphasizes the statement just made. The following table shows clearly that the highest mortality is in the thinly populated or mountainous states, as, for example, in Utah, Montana, Colorado, Minnesota and Vermont. The densely populated eastern states, with their better transit facilities, have lower rates, as New Jersey, Pennsylvania, Connecticut and Maryland. This table shows no inverse correlation

between appendicitis and peritonitis, as does the previous table. There is no correlation at all (0.0165 ± 0.1367); nor could any be expected, as the several states, at a given time, were under the same system of registration. We shall see later, however, that other influences are also at work.

MORTALITY FROM APPENDICITIS AND PERITONITIS IN THE UNITED STATES.

State.	Period.	Death-rate per 1,000,000 population.	
		Appendicitis.	Peritonitis.
Utah	1910–1913	185.9	45.5
Montana	1910–1913	179.8	56.4
Colorado	1909–1913	159.6	29.6
Minnesota	1910–1913	155.0	20.1
Vermont	1909–1913	148.3	51.5
Wisconsin	1909–1913	126.6	39.4
Michigan	1909–1913	123.5	61.9
California	1909–1913	120.5	33.2
Washington	1909–1913	119.7	13.5
Missouri	1911–1913	118.8	34.6
New York	1909–1913	118.2	24.5
Maine	1909–1913	117.3	55.9
Massachusetts	1909–1913	108.8	39.3
Rhode Island	1909–1913	107.8	21.6
Indiana	1909–1913	105.7	34.8
District of Columbia	1909–1913	104.9	55.1
New Hampshire	1909–1913	98.4	91.9
Ohio	1909–1913	98.2	37.0
New Jersey	1909–1913	93.1	18.3
Pennsylvania	1909–1913	89.9	36.8
Connecticut	1909–1913	86.5	34.7
Maryland	1909–1913	83.2	28.7
Kentucky	1911–1913	70.3	53.4
Virginia	1913	64.3	39.0

The Apparent Increase of Appendicitis—The most conspicuous feature of appendicitis statistics is the apparent increase of the death-rate in most countries. Many writers have been misled by this to assume that appendicitis was really increasing rapidly; some have even thought they had observed an increasing virulence in the disease. This cannot be so, however. If there is any increase in the appendicitis mortality it is but slight, the probability being that there is no increase at all. The apparent increase is evidently due to better diagnosis and new methods of tabulation. Deaths have been transferred to appendicitis in large numbers from simple peritonitis, and also from other groups, such as intestinal obstruction, intestinal inflammation, enteritis, and other digestive diseases. Considering how recently the registration of appendicitis deaths was begun, this is not surprising but rather to be expected. In this connection it may also be noted that the increase seems to be falling off in most countries. The mortality from appendicitis in England and Wales increased during the period 1901 to 1904, from 38 to 56, or 18 per million of population, from 1910 to 1913 it increased from 66 to 68, or only 2 per million. In Switzerland the death-rate from appendicitis increased from 90 to 116 per million during the period from 1901 to 1903; attained its maximum of 125 in 1906, and then decreased to 106 in 1910. In New York State the death-rate from appendicitis was 120 per million in 1904, which figure was only surpassed in 1913 when the rate was 122. In most European countries the mortality from appendicitis attained a maximum in 1911, which has not been equalled in the last two years.

When comparing the same group of countries or states in two different periods of time, a large increase of appendicitis generally corresponds to a

large decrease of peritonitis, as shown in the following tables:

MOVEMENT OF THE MORTALITY FROM APPENDICITIS AND PERITONITIS IN NINE COUNTRIES.

(Rates per 1,000,000 Population.)

	Appendicitis.			Peritonitis.		
	1903-06.	1909-12.	Increase.	1903-06.	1909-12.	Increase.
Norway	52	68	16	97	79	−18
Ireland	23	38	15	58	23	−35
England and Wales	57	68	11	27	12	−15
United States*	102	111	9	87	36	−51
Cuba	29	35	6	47	44	− 3
New Zealand	82	84	2	77	61	−16
Holland	25	25	0	96	84	−12
Switzerland	114	114	0	47	39	− 8
Uruguay	34	28	− 6	85	99	14

* Ten original registration states.

MOVEMENT OF THE MORTALITY FROM APPENDICITIS AND PERITONITIS IN TEN STATES OF THE UNITED STATES.

(Rates per 1,000,000 Population.)

	Appendicitis.			Peritonitis.		
	1904-08.	1909-13.	Increase.	1904-08.	1909-13.	Increase.
Vermont	114	148	34	124	51	−73
Maine	91	117	26	94	56	−38
Indiana	80	106	26	96	35	−61
New Jersey	81	93	12	60	18	−42
Massachusetts	100	109	9	78	39	−39
Michigan	119	123	4	118	62	−56
New York	114	118	4	59	25	−34
New Hampshire	102	98	− 4	102	92	−10
Connecticut	94	86	− 8	65	35	−30
Rhode Island	129	108	−21	32	22	−10

For the nine above-mentioned countries the coefficient of correlation for the increase of appendicitis and peritonitis is -0.6533 ± 0.1280; for the ten original registration states of the United States, -0.8199 ± 0.0695. The last coefficient is especially significant; that they are not higher is explained by the fact that deaths formerly classified under peritonitis have also been transferred to other causes than appendicitis; that this disease has also received deaths from other groups; and, finally, because there are, as we shall see later, independently of this fictitious increase, other and real movements in the appendicitis mortality.

We also get high inverse correlation when comparing the death-rates from appendicitis and peritonitis by single years in the same country. The coefficient of correlation for mortality from appendicitis and peritonitis in England and Wales from 1901 to 1913 is -0.9035 ± 0.0342; for Norway from 1899 to 1912 it is -0.8660 ± 0.0448; and for Holland, from 1903 to 1913, it is -0.6505 ± 0.1165. That this is not mere coincidence is still more strongly brought out by an analysis of the age distribution of this mortality. The following table for England and Wales shows that the increase of appendicitis as well as the decrease of peritonitis has been most pronounced in early and late life, being far less marked in middle life.

Appendicitis and Age.—Appendicitis is generally considered a disease distinctly of early life, but this is not strictly true. The majority of deaths occur at the ages between five and thirty years, but we must not forget that at the more advanced ages far fewer persons are exposed to risk. If

MOVEMENT OF MORTALITY FROM APPENDICITIS AND PERITONITIS, BY AGE, IN ENGLAND AND WALES.

(Rates per 1,000,000 Population.)

Age, years.	Appendicitis.			Peritonitis.		
	1903-07.	1908-12.	Increase.	1903-07.	1908-12.	Increase.
Under 15	56	72	16	28	19	— 9
15–24	76	78	2	15	8	— 7
25–34	50	54	4	15	10	— 5
35–44	44	49	5	18	13	— 5
45–54	50	63	13	24	17	— 7
55–64	57	72	15	43	24	—19
65 and over	56	75	19	86	56	—30

we calculate the specific death-rates from appendicitis by age, we will generally find a curve with two crests, one in early life and one in late life and a more or less pronounced depression between them. Except in the first few years of life, where the records are not very reliable and the diagnosis very difficult, the mortality from appendicitis varies less with age than most other causes do.

SPECIFIC DEATH-RATES FROM APPENDICITIS BY AGE AND SEX, IN ENGLAND AND WALES, 1903–07 AND 1908–12.

(Rates per 1,000,000 Population.)

Age, years.	Males.		Females.	
	1903-07.	1908-12.	1903-07.	1908-12.
Under 1	5.1	7.7	5.1	9.4
1	7.6	11.9	2.7	6.0
2	15.3	26.0	12.7	16.4
3	30.5	46.2	21.9	29.0
4	41.7	68.0	31.9	50.3
5–9	77.7	99.9	60.6	86.3
10–14	105.2	120.5	66.1	78.0
15–19	110.9	104.4	62.4	68.4
20–24	83.3	87.6	50.0	52.5
25–34	62.6	64.2	39.2	45.5
35–44	52.5	56.2	36.1	42.2
45–54	62.4	76.6	39.2	51.2
55–64	67.2	85.4	48.0	60.5
65–74	55.9	84.9	49.1	64.6
75–84	68.2	83.3	59.3	76.8
85 and over	49.9	62.1	85.0	63.4
All ages	69.1	78.2	45.5	55.1

The above table shows the mortality from appendicitis by age and sex at different periods in England and Wales. All the four columns have the same principal character: the death-rates are very low at birth; attain their maximum at about ten years of age; decline again rapidly until about the age of forty, whereupon they rise toward another, but less pronounced, crest at about seventy. As our observations are naturally few for extreme old age, the true nature of the curve is more uncertain, but there is evidence of a new decline during this period. The observations for the period 1908–12 show considerably more regularity than the earlier period, especially in the higher ages, which again shows us that we have not until very recently had anything like a complete record of the deaths from appendicitis. If we examine the mortality curve for the last five years it is quite evident that we are here dealing with a compound of two curves, both skew, and in the first case with the mode nearer the beginning of life than the mean of the curve is, in the second case with the mode nearer the end of life. Bearing in mind that a crest in the mortality curve means that the body at that age has the least power of resistance against the said disease, we get a picture of two groups of causes attacking

the vermiform appendix, one aiming at the age of about ten, the other at the age of about seventy years. The mortality from appendicitis in middle life is a compound of these two. It may be of interest in this connection to note the distribution of the deaths from appendicitis under the age of one year. In England and Wales there was one death from appendicitis, from 1911 to 1913, under one month of age; seven deaths from one to three months; eleven from three to six months, and seven from six to twelve months. This would suggest a separate curve for infantile appendicitis, possibly reaching into ante-natal life. We know of at least one case (reported by A. Gloniger, of Lebanon, Pa.) in which inflammation of the appendix vermiformis was present at birth.

Our general knowledge of appendicitis confirms this statistical picture of the disease. In childhood and youth the acute form of appendicitis is prevalent; in later life we frequently meet with the subacute or chronic types of the disease. The acute appendicitis is again classified in simple or catarrhal, suppurative and gangrenous, with or without perforation. It would be a great help in the study of appendicitis if the disease were more fully described on the death certificate, instead of merely stating, appendicitis, diffuse peritonitis, as is generally the case. It is also known that the appendix vermiformis is undergoing a gradual change from birth to senility. In old age the organ is shorter and broader than in youth and is undergoing slow atrophy. In infancy and childhood intestinal worms are of etiological importance, whereas fecal concretions are not found so frequently as in later life.

The double mortality curve is characteristic of appendicitis or the group of diseases classified under this title; we find it well defined in recent statistics for Holland and Prussia. In all cases the female rates are lower than the male rates throughout life. The depression of the mortality curve during middle life is less pronounced in the statistics of American states, and in the western states it has almost entirely disappeared, as the following table shows:

Specific Death-Rates from Appendicitis by Age in American States, 1907-13.
(Rates per 1,000,000 Population.)

Age, years.	Massachusetts.	New York.	Pennsylvania.	California.	Colorado.
Under 1	18.2	23.8	15.0	21.0	24.9
1	34.4	21.7	18.0	19.4	27.5
2	46.4	47.5	21.2	28.4	25.6
3	58.1	57.9	27.3	68.6	58.9
4	71.4	84.8	39.3	72.1	60.1
5-9	122.0	114.3	77.8	99.7	123.9
10-19	137.7	136.7	121.7	135.6	187.6
20-29	98.6	114.6	99.0	129.2	175.1
30-39	102.6	116.7	94.1	132.9	161.5
40-49	100.7	113.2	96.2	134.6	186.5
50-59	115.2	150.9	99.6	124.6	164.9
60-69	128.8	136.7	85.1	105.9	134.4
70-79	105.1	123.4	92.4	117.9	209.9
80 and over	79.4	111.7	95.9	81.8	291.1
All ages	105.9	116.1	90.6	119.6	155.7

The cardinal point to be considered in mortality statistics is the age question; certain ages will always favor certain pathologic developments or have a maximum exposure to certain dangers. When computing the specific death-rates by age and sex for each disease we get different curves, each

characterizing the exposure and the affinity of the body to the corresponding disease. The crude or standardized death-rate is not a sufficient indication of the significance of a disease, nor does it give us much information about the nature of the disease. If two age curves show much similarity there is probably a common factor in the origin or development. This might be of value in cases where the origin of the disease is yet obscure, as is, for instance, the case with appendicitis. Several bacteria have been found in the diseased appendix vermiformis, the most frequent being streptococcus pyogenes and bacillus coli communis. If we compare the age curve of appendicitis with those of other diseases we find it to have a very close resemblance to the age curve for rheumatic fever, as the following table shows:

SPECIFIC DEATH-RATES, BY AGE AND SEX, FROM APPENDICITIS AND RHEUMATIC FEVER, IN ENGLAND AND WALES, 1911–13.

(Rates per 1,000,000 Population.)

Age, years.	Appendicitis.		Rheumatic Fever.	
	Males.	Females.	Males.	Females.
Under 5	36	24	19	15
5–9	103	87	64	65
10–14	122	86	80	97
15–19	107	69	64	72
20–24	88	56	43	50
25–29	72	43	39	42
30–34	63	48	37	44
35–39	54	40	48	46
40–44	61	48	45	50
45–49	81	56	58	50
50–54	84	59	59	57
55–59	92	57	62	60
60–64	86	70	46	69
65–69	91	66	52	60
70–74	102	98	55	39
75 and over	100	95	30	35

If we except the high ages, in which the observations are few and diagnosis is difficult and uncertain, there is almost perfect uniformity between the curves of the two diseases. Excluding the ages above seventy, the factor of correlation between the specific death-rates by age from appendicitis and rheumatic fever in England and Wales, 1911–1913, is 0.8800 ± 0.0404 for males, and 0.9058 ± 0.0322 for females. The etiologic relation of the two diseases has actually been under discussion since the middle of the nineteenth century without their connection being definitely determined. In later years streptococci have been frequently isolated in cases of rheumatic fever, and it is not unlikely that these bacteria are the missing link of connection between the two diseases. If so, they must be a factor of considerable importance in the development of both diseases.

If a disease shows deviation from its normal mortality, its age curve will tell us just where the change occurs and give us a clue to its cause, and if the change is only fictitious it will in many cases tell us so. A good general view is obtained by following the specific death-rates by age from year to year, as is done in the preceding table. The table is given for England and Wales from 1903 to 1913 only, the registration of appendicitis being quite incomplete in 1901 and 1902.

This table shows two different types of movement. For males there has been no increase, or only a slight increase, of the death-rates for the age groups from five to thirty-four years, but there have been two very marked

high points, evidently corresponding to some sort of epidemic, one in 1906 and one in 1911. After these high levels of the mortality there has immediately been a rapid decrease. The conclusion would be that there has been no general increase of appendicitis among males of young age, and that the registration has here been fairly complete during the last eleven years. On the other hand, appendicitis will in this period of life, at intervals, assume an epidemic character or it is possible that we are confronted with a distinct infectious disease of the appendix vermiformis, prevalent only in childhood and youth and rare in later life. These characteristic high points are less prominent or entirely absent in the ages above thirty-five years and under five years. Instead of this we have a very marked general increase from 1903 to 1913. If we combine the age groups of thirty-five years and over and correlate the rates to the male mortality rates from peritonitis, we get a correlation coefficient of -0.8718 ± 0.0485. This inverse correlation is so high that there can be no doubt of the connection of the series of figures. We must regard this increase as due to a change in the classification of deaths. This movement is very marked in the ages under five, where the mortality has more than trebled during this period. For the females we have the same typical high points in 1906 and 1911, but pronounced only in the age groups of ten to fourteen and twenty to twenty-four; the high point of 1906 is also pronounced in the age group of fifteen to nineteen years. In the higher ages we find a strong general increase, as for males.

Appendicitis and Diarrhea.—If we examine the trend of other diseases, we find that the apparent epidemic outbreaks of appendicitis correspond to the high points of epidemic diarrhea, and the low points are in the years where epidemic diarrhea was rare. The factor for correlation between the annual fluctuations of the male death-rates for appendicitis, five to thirty-four years of age, and epidemic diarrhea is 0.9309 ± 0.0283, or almost perfect. That there is a close connection between epidemic diarrhea and appendicitis at the young ages, is also brought out by other facts. During 1911 the seasonal variations of the two diseases were the same in England and Wales; in the quarter July to September, at which time the diarrhea epidemic attained to its maximum, there were 813 deaths from appendicitis against an average of 639 for the other three quarters of the year. We also find this coincidence between the high levels of appendicitis and diarrhea in other countries. In the German Empire the number of deaths from appendicitis were, in 1910, 1911 and 1912, respectively, 3,826, 4,193 and 3,783; from diarrhea, during the same period, 98,220, 153,546 and 77,086. In Switzerland the highest mortality from appendicitis was recorded in 1906, during which year diarrhea caused a very large number of deaths. In Scotland we find the same correlation between diarrhea and appendicitis.

The bacteria most frequently connected with epidemic diarrhea are the streptococcus and the bacillus coli

communis, or the same as generally found in appendicitis. The epidemic diarrhea is most prevalent in the two first years of life, whereas appendicitis has its maximum mortality at the age of about ten years. This may be explained, however, by the assumption that climatic or other conditions favor the growth of one or both of these bacteria during a certain year, and that the condition of the human body favors an attack on the small intestine during the first two years of life, but on the appendix vermiformis in later childhood.

Urban and Rural.—During the period 1910–1913 the mortality from appendicitis in the registration states of the United States was 111 per million population; in the registration cities it was 152 per million during the same period. This difference, however, is probably largely due to the deaths of non-residents in the city hospitals, as a larger number of appendicitis cases than of any other disease are treated in hospitals. In countries where the deaths of non-residents are charged back to their places of residence we do not find this difference. In Sweden, during 1911, the mortality from appendicitis was 83 per million of population in rural districts, and only 78 per million in cities. In England and Wales, during the period 1911–1913, the standardized mortality rates from appendicitis were 84 per million male population and 59 per million female population in urban districts; in rural districts it was 73 for males and 59 for females. If we examine the age distribution of the deaths we find that the difference is almost entirely among males of the younger ages, where we know that appendicitis frequently assumes epidemic character. This could naturally be expected, as the urban crowding of people favors infection.

East and West.—When comparing the mortality from appendicitis in the eastern and western states of this country, we almost invariably find the highest mortality in the West; but this prevalence is not equally prominent in all the age groups. In the East a far higher proportion of the deaths occur during childhood and youth than is the case in the West. During the years 1907–1913, the mortality from appendicitis in ages under twenty was even higher in Massachusetts than in California, 108.6 against 102.5 per million population. This is evidently connected with the lower diarrhea mortality in the West. In the ages from twenty to forty-nine years the death-rate is 100.5 in Massachusetts against 131.9 in California. In this period the connection with diarrhea is evidently less pronounced and the determining factor is the transit facilities, densely populated Massachusetts having in this respect the better of the more sparsely settled western states. In the ages above fifty the mortality from appendicitis is about equal in the West and East: Massachusetts shows 116.3 and California 115.9. This is readily explained by the fact that at the higher ages a slow development of the disease is more frequent than in middle life. An early operation, therefore, is less imperative in this period of life and distance ceases to be death's most powerful ally.

These last few figures show us how necessary is an age analysis of every lump sum mortality rate. By simply comparing the higher appendicitis death-rates in the West with the corresponding lower rates of the eastern states we might commit the error of attributing this difference to a single cause, as, for instance, difference in meat consumption, or climate. But the equality of the western and eastern mortality in the higher ages shows that no such factor is of importance.

Appendicitis and Race.—In his work on "Appendicitis and Other Diseases of the Vermiform Appendix," Dr. Howard A. Kelley summarizes the question of appendicitis among negroes in the following sentence: "The negro race, however, seems to be comparatively exempt from the affection." The official mortality statistics for the southern states, however, do not seem to justify this statement. The data for the whole registration area of the United States cannot be utilized for such investigations as it would be unreasonable to compare the negroes in the South with white men living under different conditions in the West and in New England. We have to use the data for the same state in order to get a true comparison. If we compare the death-rates from appendicitis in Maryland, for instance, we find only slight difference between white and colored; during 1907–13 the mortality was 79.8 per million population for white, and 83.5 for colored; the standardized rates (based on the population of England and Wales, 1901) were 78.9 for white and 81.3 for colored. It may in this connection be mentioned that it is unnecessary to standardize the mortality rates for appendicitis, because it is a disease not confined to a single age period and the two crests in early and late life will almost always counterbalance each other. If we compare the death-rates by ages we find that the colored rates are considerably in excess during the ages of about twenty to forty-five, but very much lower in the higher ages. This would suggest, when compared with our previous experiences, that the registration of appendicitis deaths among negroes is not yet complete. This does not necessarily imply a higher frequency of appendicitis cases among negroes, as we know from the experience of the Johns Hopkins Hospital of Baltimore that the case fatality is much higher among negroes, but the colored people are not even comparatively exempt from appendicitis. Also among other races is appendicitis frequent. The statistics of Japan and Singapore show it to be a common disease among the Mongolian race. We meet with it in the reports from the hospitals of India, among the natives of Africa and of the Fiji Islands. As no age is exempt, so we find that no race or nationality is exempt from inflammations of the appendix vermiformis.

Appendicitis and Occupation.—We know very little about the prevalence of appendicitis by occupations. The United States Mortality Statistics for 1908 made a study of occupational mortality; in Tables VII and VIII are given the percentage of deaths from all causes due to appendicitis in each occupation. It is seen from these

tables that appendicitis is most frequent among people of professional or clerical service, least so among laborers. Some of the percentages are for males: journalists, 3.3; teachers, 2.4; engineers and surveyors, 2.2; bookkeepers and clerks, 2.1; artists and architects, 1.8; bankers and brokers, 1.7. All the low rates we find among laborers: millers, 0.3; janitors, 0.3; sailors and fishermen, 0.5; gardeners, 0.5; masons, 0.5; blacksmiths, 0.6; coopers, 0.6; plasterers, 0.6; railroad employees, 0.7; carpenters, 0.7. That the nervous strain of professional life is the cause of this is mere conjecture. The more probable explanation is that clerical and brain work is generally sedentary work and favors constipation, which again favors bacterial growth in the intestines. The data for females confirm this conclusion, the percentage being 5.4 for stenographers and typewriters, 3.2 for bookkeepers and clerks, and 2.3 for milliners, but only 1.0 for servants and 0.8 for laundresses.

Conclusions.—There is no evidence that the apparent increase of appendicitis mortality is caused by a greater frequency or virulence of the disease, whereas many facts indicate that this increase is simply caused by the shifting of deaths from other groups.

Appendicitis is met with in all ages, from birth to extreme old age. It has its highest mortality in the age period of ten to fourteen years, but attains another high point in later life, for males in the sixties, for females in the seventies.

No race or nationality is exempt from appendicitis; the mortality is about the same among negroes as among white people. It is frequent also among the Japanese and Chinese.

Appendicitis is much more frequent, especially in the younger ages, during the years of diarrhea epidemics. The annual fluctuations of appendicitis are closely connected with the prevalence of this disease.

Appendicitis shows also a close connection with rheumatic fever.

The mortality from appendicitis is, other things being equal, highest where mountains or long distances make transportation to hospitals difficult. This is most pronounced in middle life.

Appendicitis is of about equal frequency in urban and rural communities. In cities it is more common in childhood and youth because of the higher frequency of diarrhea in cities; but on the other hand, the mortality is higher in rural districts during middle life because of the longer distances to hospitals.

Appendicitis is most frequent in occupations with much sedentary work, probably because this favors constipation.

The statistical method can be a great help to the medical investigation of appendicitis, as in many other diseases. What we need most is exact statement on the death certificate of the nature of the disease. This detailed information given, the data should not be combined into too few groups but given in great detail according to age, sex, race and character of the disease. We also need an exact statement of the incidence by age of the several bacteria found in the diseased vermiform appendix. It is not

possible at present to determine for certain whether we, in the cases we term appendicitis, are confronted with a single disease or several diseases of different origin. A notification of the cases of the more important non-infectious diseases, although very desirable, belongs probably to the far future.

◆

THE COMMON DANGERS OF DAILY LIFE.

The annual reports of Dr. F. J. Waldo, as coroner for the city of London and Southwark, invariably throw light on many problems of direct interest to the public health service. It is not too much to say that Doctor Waldo has magnified his office, for he has made wise use of the publicity attending the holding of inquests to elucidate and warn the community regarding the common dangers of daily life.

During the year 1915 Doctor Waldo inquired into the circumstances of 696 deaths and non-fatal fires—an excess of 58 over the number recorded for 1914. As regards traffic fatalities, he held 63 inquests—the highest number since the introduction of motors yet recorded by him. He points out that the marked increase in those deaths, throughout London, synchronises with the darkening of the streets and bridges dating from the first order rendered necessary by Zeppelin raids, made on the 1st October, 1914. In a large proportion of cases traffic fatalities are brought about by the careless disregard of pedestrians for their own personal safety. Attempts are frequently made by them to cross streets without troubling to look for a refuge or subway, or, at night, for a lighted part of the streets which would afford the driver, with his diminished lights, an opportunity of seeing the pedestrian in time to avoid running over him. Pedestrians, again, frequently fail to look for on-coming traffic, and as often as not cross the road concealed from behind or in front, as the case may be, of a stationary or slow-moving vehicle, without making sure that fast traffic is not passing in either direction. As regards prevention, the most pressing needs emphasized by Doctor Waldo are: 1. More street refuges—including such in broad streets along which tramcars run. 2. More police, stationed especially at traffic crossing points. 3. More life-guards or fenders—at least in the shape of side-guards for hind wheels—*for all* heavy motors.

Referring to criminal deaths, Doctor Waldo points out the great usefulness in his two districts, of the Hercher apparatus for the preservation of unidentified bodies by the agency of formalin—the only apparatus of the kind yet installed in any mortuary connected with a coroner's court. It would certainly seem that in the interests of justice, quite apart from other reasons similar apparatus should be provided in every coroner's district. Touching the subject of anæsthetics, Doctor Waldo notes that in all cases save one, death was due to or accelerated by the administration of chloroform, or a mixture containing this substance. It is a gratifying fact, however, that of late years there has been a marked decline in the number of deaths under anæsthetics.

On the working of the Pharmacy and Poisons Act, Doctor Waldo says: "Juries have from time to time agreed with me that the habit of drug-taking was a public danger, destructive alike of the bodily, mental, and especially of the moral faculties, and that every means ought to be taken to prevent the evil; and that greater restriction of the sale of dangerous drugs, such as laudanum or tincture of opium, was urgently needed in the public interest." With this object in view, Doctor Waldo gives a copy of the correspondence between himself and the Lord President of the Privy Council, the supreme authority who decides which drugs are to be scheduled under the Poisons Act, and in which part of the schedule each poison is to be placed. He pointed out to the council that since the introduction in the *Pharmacopœia* of 1914 of a stronger laudanum, two "laudanums" of different strengths might be purchased by the public, and that it was only necessary to sign in the poisons book for the stronger tincture. Further, that "considering the deadly properties of the drug, and that one drop of the weaker 'laudanum' has been known to kill a baby, so long as the two kinds are allowed to be sold under the same name, fatal mistakes between the bottles containing the poison are bound to happen, and the number of unnecessary deaths accordingly increased. It would be greatly to the public interest if the Privy Council disallowed the use of the word 'laudanum,' save only as a synonym for the new (1914) variety." This suggestion has not yet been carried out, but, as a compromise, the Privy Council wrote the coroner saying that by Order of Council of 9th February, 1916, henceforth the weaker laudanum would come under the same restrictions as the stronger, and might only be purchased from chemists by those personally known or introduced to them after signing the poisons book.—*Medical Officer*, London, May 27.

THE BACILLUS CARRIER AND THE RESTAURANT.

ARTHUR I. KENDALL,
Department of Bacteriology, Northwestern University Medical School.

ONE of the noteworthy manifestations of modern industrial expansion is a marked division of labor and a progressive development of occupational specialization, and the inevitable outcome of this movement is an ever-increasing concentration of individuals within restricted areas. The health problems arising from the rapid increase of urban populations are of such magnitude and complexity that public opinion will eventually demand an installation of thoroughly trained experts to cope with them.

Prominent among these problems is that of the public and semi-public restaurant. Economic and domestic conditions have forced large numbers of city dwellers to obtain one or several meals per diem from restaurants and delicatessen; these public eating places are gradually displacing the time-honored system of home-cooking. Undoubtedly there are advantages and disadvantages in this change; from the viewpoint of public health there is cogent danger in an uncontrolled development of this character. The public restaurant is a potential factor in the spread of certain types of disease because foods from many sources, manipulated by many hands, are dispensed to many patrons.

The occasional dissemination of disease through food is well established; infected shellfish, milk, meat and vegetables have been shown to transmit typhoid bacilli and the viruses of other excrementitious diseases, botulism, and that large and somewhat poorly defined group of gastro-intestinal disturbances commonly classed as food poisoning to susceptible individuals who partake of them. These diseases can be transmitted through food without the mediation of the restaurant, and the chief importance of the latter in this association is to provide a distributing point for infected food. Fortunately the efficiency of national, state and municipal food inspection reduces the danger of infection from raw food stuffs to a minimum. On the other hand, the rapid increase in the personnel of the catering industry automatically increases the danger of infection of food prepared and handled in the restaurant, for it is obvious that the greater the number of individuals engaged in manipulating the food of the public the greater are the chances that bacillus carriers will be drawn into the public culinary service. A bacillus carrier engaged in preparing or serving food for a multitude is a greater menace to the public health than would be the case if these same activities were exercised in but a single family. The association of infection with a carrier is usually evident in the home, but for obvious reasons it is frequently difficult to establish in the restaurant. Judging from available evidence, the

restaurant does not appear to be a potent factor in the spread of disease, but a potential danger exists, as the following actual experience clearly shows:

Seventeen cases of typhoid fever developed among the five thousand employees of a large departmental store within two weeks. There was little typhoid in the city at the time—rather less than usual—and the cases were so widely distributed among different departments that no single intramural factor could be advanced to explain this sudden outbreak. A thorough examination of the entire plant failed to reveal a plausible source of infection. All of the patients were accustomed to eat their midday meal in a nearby lunchroom. An investigation of this lunchroom revealed the very significant fact that several cases of typhoid fever had developed among the employees; a waitress recently convalescent from typhoid was the probable source of infection. This view was sustained by a prompt cessation of new cases when the lunchroom was closed.

The departmental store in question maintains a restaurant department which requires about two hundred and twenty-five employees—cooks, waitresses and scullions—for its operation. It was probable, but not absolutely certain, that none of the restaurant employees had eaten in the lunchroom; if they had eaten there they had been definitely exposed to infection. The infection might develop as a mild ambulatory case of typhoid fever, or the bacillus carrier state, either of which would be serious because an unrecognized ambulatory case, or a bacillus carrier working in the restaurant might transmit the disease to a large number before the condition was realized.

The most pressing and immediate problem obviously was to formulate a plan, simple in procedure and efficient in operation, which could be utilized at once to eliminate the possibility of infection of employees or patrons of the restaurant, pending an individual search among the former for incipient and ambulatory cases of typhoid, and for carriers. These measures were to be supplemented by a rigorous examination of all new employees prior to their admission to the restaurant staff.

The portal of entry of the typhoid bacillus is the mouth, to which it may be carried directly by infected fingers, and less directly in infected food, milk, or water. This explains the relation of the restaurant to the spread of typhoid.

The typhoid bacillus leaves the body of the typhoid patient and the typhoid bacillus carrier in the feces, and less commonly in the urine. The hands of a typhoid carrier are exposed to direct infection from the feces or urine one or several times daily and it requires little imagination to follow the organisms from the infected and imperfectly cleansed fingers of a cook or waitress to the mouth of the prospective victim. It would appear, therefore, that bacterially clean hands would be an extremely important factor to insist upon among the employees of a restaurant.

The plan adopted consisted first of an explanation in simple terms to the

employees of the possibility and mode of infection, and the efficiency of soap and the thorough scrubbing of the hands, with the necessary demonstrations; then the enforcement of hand cleansing under the supervision of a nurse of strong personality. Each employee was required to "scrub up" before entering the space set apart for the restaurant, in the morning, after the noon recess, and after an absence during the day. The entrance to the restaurant department happened to be so arranged that this plan was feasible.

Efficiency of the Method.—The success or failure of scrubbing the hands depends obviously upon the sterility of the brush and the washing water, that is, their freedom from typhoid bacilli and similar organisms, the thoroughness of the individual effort, and the efficiency of the supervision. The sterility of the brush and the water, that is to say, the absence of pathogenic bacteria, can be practically insured by keeping the former in a disinfecting solution and using water of known purity. The water supply of the store under discussion was filtered and known to be free from colon bacilli and similar organisms; the soap used was one containing a moderate amount of a phenol derivative.

The bacterial efficiency of the scrubbing process is indicated by the following experiment: A series of seventy-two fruit jars, each containing a small amount of absorbent cotton and 200 cc. of water, was sterilized in the usual manner. Each of seventy-two employees was required to wash his hands with the cotton, rubbing it thoroughly under each finger-nail, and then to replace the cotton in the jar, which was sealed and numbered. Sixty of the seventy-two had previously scrubbed their hands under supervision; twelve washed their hands without the preliminary scrubbing. The jars were sent to the laboratory and examined for Bacillus coli, it being assumed that the absence of this organism would be a strong indication of the practical success of the cleansing process.

The cotton was squeezed approximately dry with sterile forceps, and 0.1 cc. and 1 cc. respectively of the water from each jar was planted in lactose broth in the usual manner. After forty-eight hours' incubation the water in which each of the twelve unscrubbed individuals had washed his hands showed Bacillus coli in 0.1 cc. The samples of water obtained from the employees who had scrubbed their hands prior to the experiment showed no colon bacilli even in 1 cc. This experiment, carried out under strict supervision, was deemed sufficiently conclusive to warrant a tentative assumption that the danger from infection by an unrecognized bacillus carrier was reduced to a minimum. Of course, the measure did not influence the possibility of infection through milk or other food-stuffs contaminated outside the store, and it does not take cognizance of respiratory diseases spread by droplet infection.

Attention was now directed to an examination of the two hundred and twenty-five employees comprising the restaurant personnel for typhoid carriers. Two laboratory possibilities

present themselves for this purpose,—the actual isolation of the typhoid bacillus from the feces or urine, which is conclusive, and the Widal reaction. It is well established that a majority of convalescent typhoid patients give a positive Widal reaction which may persist for months or years after clinical recovery. Many typhoid bacillus carriers also have a positive Widal, hence it was deemed logical to examine the blood of each employee for the presence of agglutinins specific for Bacillus typhosus. The dried blood method was used. It was realized that a positive Widal reaction does not necessarily indicate a bacillus carrier—a majority of recovered cases do not become bacillus carriers; a positive reaction also may result from a prophylactic immunization with typhoid bacilli. A negative Widal reaction conversely does not necessarily exclude bacillus carriers, incipient infections or ambulatory cases, because agglutinins specific for the typhoid bacillus do not appear in every convalescent case, nor do they appear regularly during the first week of the clinical disease. Four positive reactions were found among the two hundred and twenty-five employees, but repeated examinations of their feces and urine were negative for typhoid bacilli. It is probable they were not carriers.

The final proof of a bacillus carrier, as stated above, rests upon a demonstration of typhoid bacilli in the feces or urine. An examination of urine for typhoid bacilli is relatively simple. Upon Endo plates the typhoid bacilli grow readily and in relatively pure culture as a rule. The urine samples of all of the employees were negative for typhoid bacilli; many, however, showed colon bacilli, due largely to the necessarily imperfect method of collecting the samples. Seventy-six samples of feces were examined for typhoid bacilli, all of them being negative. This latter method was abandoned, partly because of the difficulty in getting feces, partly because the subsequent control of the hand-scrubbing method showed that it retained its efficiency. One bacillus carrier was detected—a cook convalescent from illness of several weeks' duration reported for duty. The urine, feces and blood were submitted for examination. The Widal reaction was positive and typhoid bacilli were found in the feces, but not in the urine. The individual was informed of his condition and was not admitted to the restaurant staff.

This investigation together with a conference with the administrative and executive officers of the store led to the establishment of a policy along the lines indicated above, which was to be rigorously maintained. A survey of the sources of milk and various foods brought to the store indicated that the sources of supply were as safe as it is possible to obtain them commercially.

Supervision of manual cleanliness maintained along the lines indicated above, with the coöperation of the management, the nurse and the employees should reduce the potential dangers of bacillus carriers to a minimum, and the relatively slight cost of the protection afforded is more than compensated for by the feeling of relative security both from the viewpoint of the store and of the patrons.

PUBLIC HEALTH PUBLICITY.

EDWARD A. MOREE,
Director of the Atlantic Division, American Red Cross.

V. Newspaper Advertising.

A NEWSPAPER is conducted by its proprietor to make money.

Many social workers seem to forget this. The newspaper proprietor makes his money chiefly through the sale of advertising space. His advertising space has value because he sees to it that the news he prints attracts readers. These readers pay a very small sum for the privilege of reading his news. In the case of a penny paper, the price scarcely pays for the paper upon which it is printed.

In the fourth article of this series, I attempted to show that the production of a newspaper was a highly complicated process, involving the organization of a large staff and the use of an expensive plant. I also attempted to show that the only test applied by the wise newspaper editor to copy submitted for publication was this: Will it interest any large number of people?

If a man goes into the business of manufacturing baked beans, he will not bake red kidney beans if he knows that a very large proportion of bean eaters prefer white beans. I venture to say that no bean baker would listen for a moment to even the most impassioned appeal from the secretary of the American Association for the Amelioration of the Condition of Growers of Kidney Beans that he bake kidney beans instead of white beans. The bean baker might be willing to make a considerable contribution for the relief of the suffering families of the growers of kidney beans, but more likely he would furnish large quantities of white bean seed and conduct a campaign of education among the growers of kidney beans to convince them of the error of their ways in sticking to kidney beans when the demand was for some other kind.

THE WHITE BEAN OF NEWS.

Most newspaper proprietors know the difference between the kidney bean and the white bean in news. They know that people who buy newspapers are not interested in a great deal of the material that is submitted to them for publication by health officers and other social workers. Newspaper men have tried to impress this upon social workers and have tried to show them that in giving up valuable space to the publication of matter that is not news, they are losing both the value of the space and the interest of their readers.

In every social service movement, and especially in public health work, there is a wide range of facts that should be placed before the public but that can under no circumstances be classed news. In public health

work it is possible to use much of this material as special articles. These are not news but are signed or unsigned editorials; they become part of the general educational efforts of the newspaper and are valuable to it in establishing character.

Circulation is valuable for two main reasons. First—because it is large; second—because it has character. These special articles are read, not by the man on the street car, but by the woman in the home. Women in the homes are the largest potential purchasers of merchandise and their interest in the newspaper is particularly valuable to department store advertisers. Several state departments of health have employed these articles with great success. Hundreds of newspapers in New York, Pennsylvania and other states have gladly printed them. Such articles are usually sent out in stereotype plate. There are two chief producers of these plates in this country. They will take your copy and turn it out in pages of articles that can be thrown right into the forms of a newspaper without delay and without setting type. Because of the expense involved the stereotype article is available only to state departments or associations.

Let's Help the Crippled Kiddies

The Van Leuven Browne Hospital-School points the way for us. It has already saved scores of misshapen, twisted, crippled little bodies and with just a little help it will save hundreds more. Two hundred thousand dollars, one hundred thousand for new buildings, one hundred thousand for endowment fund will give Detroit the first educational colony for cripples in the world. You can help make up that sum. It is not a great amount to ask of busy, prosperous, happy Detroit. But it means so much to the little crippled bodies of the community. The home has always been open wide to these little unfortunates. No child has ever been refused because it could not pay for its care. That is why the demands on it make the proposed colony absolutely necessary. That is why also, you ought to respond, willingly, promptly.

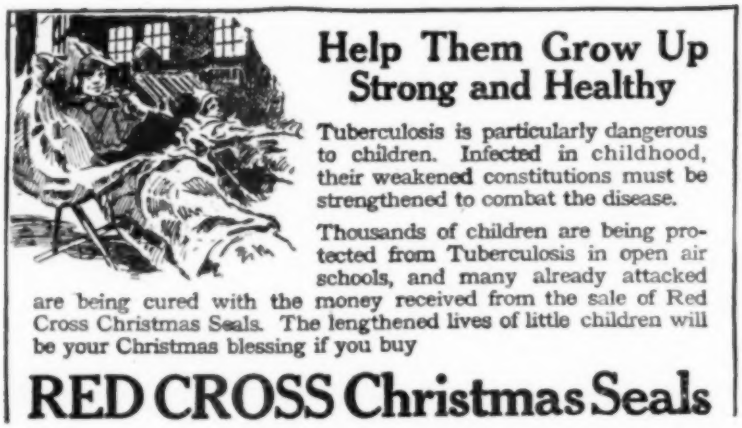
What the $200,000 Will Do

New Board of Trustees

Humanity's appeal in paid for space.

Special Story Requirements.

Scientific discussions of the causes of diseases and the means of preventing them, written in popular language; hints on personal hygiene; suggestions as to the feeding and care of babies; articles on home and farm sanitation; selection, care of and preparation of food; what is really dangerous food and how to differentiate between the fakes and the real thing in food reform,


Help Them Grow Up
Strong and Healthy
Tuberculosis is particularly dangerous to children. Infected in childhood, their weakened constitutions must be strengthened to combat the disease.
Thousands of children are being protected from Tuberculosis in open air schools, and many already attacked are being cured with the money received from the sale of Red Cross Christmas Seals. The lengthened lives of little children will be your Christmas blessing if you buy
RED CROSS Christmas Seals

A good way to sell Christmas seals.

are all important health information that can be given to the press in the form of signed articles or unsigned special stories. Only three requirements are placed upon this kind of article by the editor: one, it must be scientifically accurate; two, it must be in newspaper style; three, it must hold interest both as to subject matter and presentation.

The health officers who can meet the second and third of these requirements are scarce. You could count on the fingers of two hands (in fact I think you would need only one) the physicians who can write an interesting essay on a baby's stomach-ache or build an instructive printable article on a sanitary privy. Physicians generally in trying to produce popular newspaper or medical articles find themselves victims of faulty environment. They speak a language utterly foreign to the average reader and they elaborate details that are important in a clinic but have practically no value in a newspaper where human interest must hold sway.

Two Other Publicity Avenues.

The health officer, barred out of the news columns because his information is not news; barred out of the special field because he cannot write popular "stuff," still has two avenues through which he can reach his public. He can print circulars and pamphlets or he can buy newspaper advertising space. The former has the sanction of long usage and but little else to recommend it; the latter has the approval of almost the entire business world. Show me a business man who depends on circulars and pamphlets to reach his public with information about his goods and I will show you one who is headed for bankruptcy.

The preparation of circulars and pamphlets has long been a feature of public health education. The successful employment of such means of publicity involves, however, the very difficult problem of circulation. Most annual reports contain interesting figures on the number of pamphlets distributed. No estimate is ever given

as to the number of these that are read. Judging by the usual method of distribution, an estimate that approximated fact would not make a very creditable showing.

Circulars of information on health subjects distributed at county fairs, motion picture theatres and churches have a very limited value. It is like sowing seed in soil that has not been properly prepared. One would scarcely think of planting onions in a bed that has been prepared for roses. Any one who sowed wheat in a field that was suitable only for celery would not only lose money but before long would be visited by a commission to inquire into his sanity.

Useless Effort.

People who go to motion picture shows, to county fairs, or to church are bent upon some object entirely foreign to public health. Fair crowds and motion picture audiences are looking for amusement. They are not interested in tuberculosis and typhoid fever. Those who go to church are either bent upon worship or are sore because it rained that day and they could not play tennis or golf. In either case they are not in the proper frame of mind to assimilate public health information. Lectures or circulars given to such crowds are just one step short of useless.

VERMONT
STATE BOARD OF HEALTH

RECULATIONS
RELATING TO
Contagious Diseases

The following diseases MUST be reported to the
HEALTH OEFICER
By

(a) The head of the family in which the disease occurs.
(b) The physician called to attend such a disease.

Typhoid (enteric) Fever
Smallpox (Variola, Variuloid)
Chickenpox (Varicella)
Measles (Rubeola, Morbilli)
Scarlet Fever (Scarlatina, Canker-rash)
Whooping Cough (Pertussis)
Diphtheria (Croup, Membranous Croup)
Mumps (Epidemic Parotitis)
German Measles (Rotheln)
Infantile Paralysis (Poliomyelitis)
Epidemic Cerebro-spinal Meningitis (Spotted Fever)
Erysipelas
Tetanus (Lock-jaw)
Ophthalmia Neonatorum (Eye Disease of the New-born)
Hydrophobia (Rabies)
Anthrax
Glanders

THE HOUSE MUST BE POSTED
with a card bearing the name of the disease in cases of Typhoid Fever, Smallpox, Chickenpox, Measles, Scarlet Fever, Whooping Cough, Diphtheria, Mumps, German Measles, Infantile Paralysis and Epidemic Meningitis.

ALL THESE DISEASES, EXCEPT TYPHOID FEVER MUST BE QUARANTINED.

The card may be removed ONLY BY THE HEALTH OFFICER at the termination of the Quarantine.
(See Sec. 5441 Vermont Statutes)

Watch further advertisements for more details.

No. 2.

VERMONT
STATE BOARD OF HEALTH

PHYSICIANS
AND
HEADS OF FAMILIES
TAKE NOTICE!
LAWS
RELATING TO
Contagious Diseases

These diseases MUST be reported to the
HEALTH OFFICER
(See Sec. 5484 of the Vermont Statutes)
By

(a) The head of the family in which the disease occurs.
(b) The physician called to attend such a disease.

The physician is required to "immediately quarantine" at his first visit.

If the physician is "unable to make a specific diagnosis" at the time of his first visit, he may quarantine until such a diagnosis can be made.

Such quarantine is in force until the health officer can examine and quarantine.

Attending physicians must report such cases as they SUSPECT may be "infectious or contagious," as well as those they KNOW to be such.

"A head of a family or a physician who fails to give reasonable notice to the health officer of the existence of such disease shall be fined not more than $50 nor less than $10 with costs of prosecution."

Watch future advertisements for more details.

No. 1.

If house to house distribution of hand bills and circulars in your city is not prohibited by city ordinance, it should be. It is in most cities. The

The OTHER
Little Boy
Your boy is in safe keeping.
But there are a great number of little unfortunates who literally LIVE ON THE STREETS and who get the wrong kind of training and education there
It is for these other little boys that the Boys' Clubs are being organized and equipped.
To carry on this work properly we have undertaken to raise $500,000. by January 21st for a new building, for gymnasium apparatus, for books and magazines—for the necessary equipment to care for the boys in a careful, effective way
Won't you help in this splendid work of building better boys?
You are invited to visit the Boys' Club at 161 Avenue A, to see for yourself what wonderful help is being given the other little fellows.
Send contributions to
E. N. POTTER, Treasurer,
The Boys' Club Association of New York
61 Wall Street.

Don't you want to help the other little boy after reading this?

fact that many cities have ordinances on this subject, is conclusive proof that the practice is an insufferable nuisance.

Sending circulars through the mail is therefore the only means of much value left to the health officer for the distribution of information prepared in this form.

The first problem presented by the mailing method is that of selection of list. Any list employed will of necessity be incomplete. It will not reach every one who should be reached.

Cost of Mail Circularization.

A correlated problem is cost. Unless you know exactly the group that it is most important to reach with any particular piece of health information and know where you can get a list, the only recourse is the broadest possible general list. This is usually the registry list which includes all voters. To cover a city of 50,000 on a registry list involves using a list of not less than 10,000. The cheapest possible method of mailing would be an unsealed one cent stamped envelope with a hand written address. This would cost not less than three cents per letter, and might run up to more than four cents depending upon the cost of the circular and the difficulty of enclosing it. The cost of reaching such a list, therefore, would be not less than $300. For this $300 you would probably actually reach not more than one tenth of the list you use with the facts that you desire to present. You would therefore reach about one fiftieth of your total population." You would not reach women, unless you live in a suffrage state; you would not reach children and you would not reach the thousands of men who are weary of circular letters.

For special kinds of information, intended for special groups, some form of mail circularization is probably the best plan. In order to be effective, however, it would have to be done on a more expensive basis than the one cent unsealed letter. A two cent stamped envelope with a personally written letter or a letter so carefully filled in that it is indistinguishable from the typewritten letter would

give you more nearly 100 per cent. efficiency. The expense of this and the mechanical difficulties in the way of it make it possible for only relatively small lists.

Where Circulars Are Valuable.

The distribution of special information to labor unions, in their meetings, to school children, in the schools; or to parents through the school children (if the information is about children) may bring good results. Circulars are valuable in connection with exhibits because people who visit exhibits are after public health information. Visiting nurses and health officers will always find circulars of value when put in the hands of patients or members of their families. And there you have said about all that can be said for the ubiquitous nuisance.

Many features of public health publicity fail to bring adequate return for the effort expended. It is unfortunately true that most health departments do not know how much of their public health education actually reaches the people it is supposed to educate. This is especially true of the circular type of publicity. Its chief disadvantage, besides expense and difficulty of distribution, is that it either does not reach the person for whom it is intended or it reaches him at a moment when he is not mentally attuned to that particular kind of information.

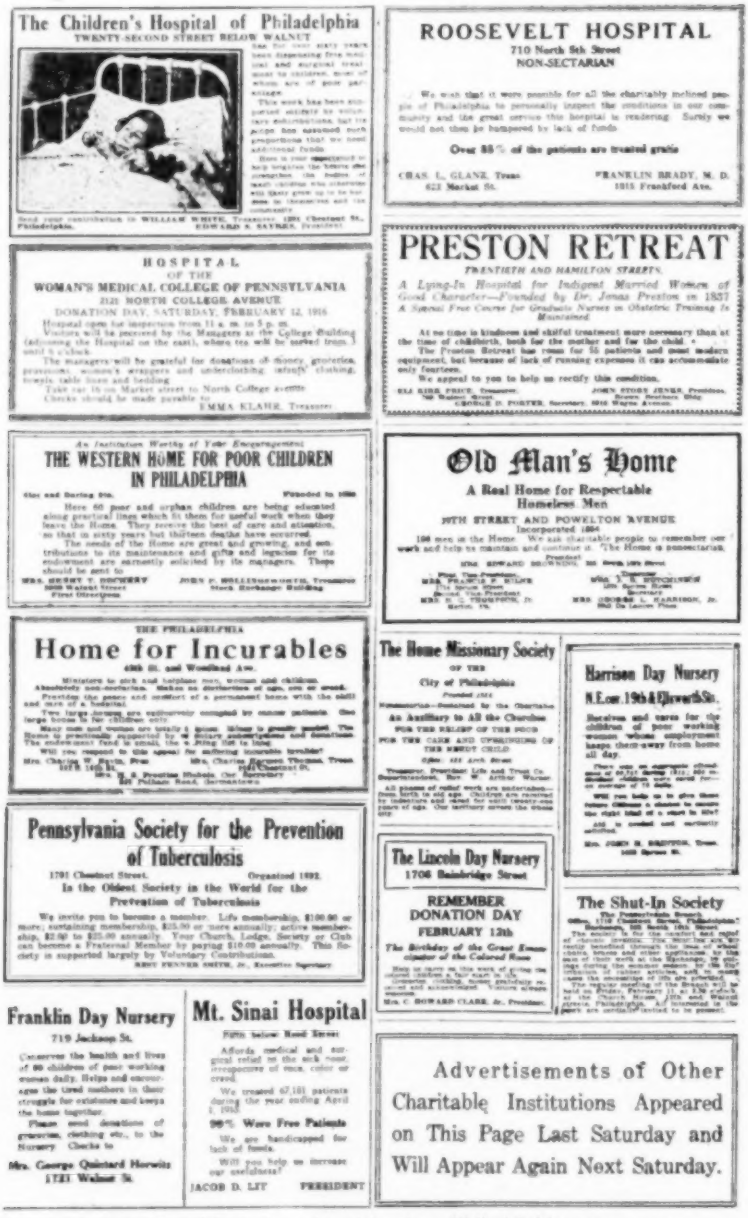
Probably no health officer has ever tried going along the street tapping people on the shoulder indiscriminately and informing them that "Tuberculosis is preventable" or admonishing them to "swat the fly." Not the fly but the health officer would be "swatted."

And yet that is practically what is done when we attempt to force our public health educational efforts into all sorts of places, to catch people unawares and spring upon them some of our highly important but uninteresting information. In most of these attempts, we are a little more than psychological pick-pockets or mental highwaymen. We spring upon the intellects of our people and hold to their heads our automatic publicity guns and make them stand and deliver their interest.

I have seen health officers and other social service workers rub their hands in glee at discovering what they choose to term "a ready made audience," to which they can either distribute circulars or make a speech, without the trouble and expense of getting the crowd together. The value of such audiences is extremely limited. People do not like to be pounced upon with facts much more than they like to be pounced upon with a black-jack.

One Hundred Per Cent. Efficient Publicity.

Nearly everyone will agree that the nearest approach to 100 per cent. efficiency in public health education is talking directly to a person who has come to the health department for the purpose of getting information. The nearer you can approach this relationship to your public, the nearer will you approach a perfect score.

A person reading a newspaper is seeking information; he is in the right mental attitude to receive information.

The Children's Hospital of Philadelphia
TWENTY-SECOND STREET BELOW WALNUT

ROOSEVELT HOSPITAL
710 North 5th Street
NON-SECTARIAN

HOSPITAL OF THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA
2121 NORTH COLLEGE AVENUE

PRESTON RETREAT
TWENTIETH AND HAMILTON STREETS

THE WESTERN HOME FOR POOR CHILDREN IN PHILADELPHIA

Old Man's Home
A Real Home for Respectable Homeless Men
39TH STREET AND POWELTON AVENUE

THE PHILADELPHIA
Home for Incurables

The Home Missionary Society
OF THE City of Philadelphia

Harrison Day Nursery

Pennsylvania Society for the Prevention of Tuberculosis

The Lincoln Day Nursery
1706 Bainbridge Street
REMEMBER DONATION DAY
FEBRUARY 12th

The Shut-In Society

Franklin Day Nursery
719 Jackson St.

Mt. Sinai Hospital
Fifth below Reed Street

Advertisements of Other Charitable Institutions Appeared on This Page Last Saturday and Will Appear Again Next Saturday.

A page of social service advertising in a Philadelphia newspaper.

He is so keen for information that he reads some portion of everything that comes before him as he turns the pages. He skims over page after page, catching a head-line here and a picture there and delving more or less deeply

into those articles which attract his attention and arouse his interest.

The public health article, or the public health advertisement is, of course, to some degree, an interloper, even in this place. It is true, however, to a less degree than in almost any other form of public health publicity; the newspaper is recognized by every one as the purveyor of information and any form of information is in its proper place when it appears in the paper.

Your newspaper reader may be chiefly interested in baseball scores, or in some other historic event, it is true. For such a one the public health story must immediately establish its interest and establish its right to be in the newspaper, or it will be passed unnoticed. The man in search of baseball scores, however, does not feel any irritation at being tapped on his mental shoulder by a health department item and being asked to remember that typhoid can be prevented by vaccination, or that flies are a menace to health. He is accustomed to seeing in his newspaper all kinds of information, and is not surprised at anything he finds there.

In this respect he is entirely different from the man seeking amusement or attending a meeting organized for a purpose remote from public health education.

It seems true, therefore, that the newspaper reader more nearly approaches in mental attitude—in his desire for information—the person who comes to the health office than does an individual approached with health information in any other way.

Why Should We Use Advertising?

In considering the possibility of newspaper advertising, leave out of consideration the newspaper publisher's attitude; pass over his claims to our advertising patronage because, in presenting our news, he is giving us publicity of great value; neglect for the present all of his arguments based on the fact that he has just two things to sell, his paper and his advertising space and that without revenue from advertising space any newspaper would die.

All of these arguments are extremely important and almost any one is sufficient to justify paid-for space in health publicity. The strongest possible argument, however, for the use of this publicity avenue, is the fact that it provides the cheapest, most readily available, and the most efficient means of reaching the largest number of people who are in a mental attitude to receive public health suggestions.

Advertising is not comparable to free newspaper publicity in any important aspect. Suggest paid-for space to a social worker who has not considered the subject before and you will get one of two reactions. He may say:

"But we are getting all the news space we go after and if we began paying for advertising space, we would establish a precedent that would make it more difficult for us to get our publicity into the papers."

Or he may say:

"It is expensive, we can't afford to buy advertising. If the newspapers are not public-spirited enough to print

No. B-1998—May 11—FRANK PRESBREY—TIMES REVISE
Where You Preparedness Paraders Meet Tomorrow
Boy Scouts of America will seek to enroll you as members of
THE
AMERICAN RED CROSS
They will ask you to sign a blank pledging yourself to at least one $1 membership in this wonderful relief organization.
The Red Cross needs YOU—not for active service, but to support its efforts to relieve the suffering caused not only by the possible disaster of war, but also by the inevitable disaster of peace.
YOU and YOURS may some day need the Red Cross. The Red Cross needs YOU—NOW—TODAY!
Sign this pledge today and mail your membership fee to
H. D. GIBSON, Treasurer,
THE AMERICAN RED CROSS
287 Fourth Ave., New York.

Telling a straight-from-the-shoulder story in paid for space.

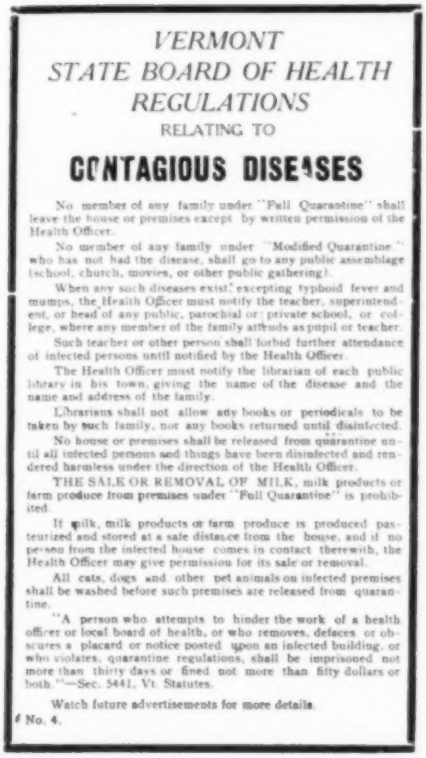
our items, we certainly cannot devote our appropriation (or contribution) to the payment of advertising."

The facts are, of course, that you cannot check paid-for advertising off against news publicity, and you cannot argue it out of court on the plea of expense.

No one in his senses would urge the use of advertising space for the presentation of news matter. If you do anything worth while or say anything that is of news value, your papers will be glad to print it.

News and Advertising.

The fact that Wanagimbel's has reduced the price of ribbon one cent per yard has actual news value, but is not a fact that is of interest to a sufficieatly large number of readers to justify its presentation in news col-



VERMONT
STATE BOARD OF HEALTH
REGULATIONS
RELATING TO

CONTAGIOUS DISEASES

No member of any family under "Full Quarantine" shall leave the house or premises except by written permission of the Health Officer.

No member of any family under "Modified Quarantine," who has not had the disease, shall go to any public assemblage (school, church, movies, or other public gathering).

When any such diseases exist, excepting typhoid fever and mumps, the Health Officer must notify the teacher, superintendent, or head of any public, parochial or private school, or college, where any member of the family attends as pupil or teacher.

Such teacher or other person shall forbid further attendance of infected persons until notified by the Health Officer.

The Health Officer must notify the librarian of each public library in his town, giving the name of the disease and the name and address of the family.

Librarians shall not allow any books or periodicals to be taken by such family, nor any books returned until disinfected.

No house or premises shall be released from quarantine until all infected persons and things have been disinfected and rendered harmless under the direction of the Health Officer.

THE SALE OR REMOVAL OF MILK, milk products or farm produce from premises under "Full Quarantine" is prohibited.

If milk, milk products or farm produce is produced pasteurized and stored at a safe distance from the house, and if no person from the infected house comes in contact therewith, the Health Officer may give permission for its sale or removal.

All cats, dogs and other pet animals on infected premises shall be washed before such premises are released from quarantine.

"A person who attempts to hinder the work of a health officer or local board of health, or who removes, defaces or obscures a placard or notice posted upon an infected building, or who violates quarantine regulations, shall be imprisoned not more than thirty days or fined not more than fifty dollars or both."—Sec. 5441, Vt. Statutes.

Watch future advertisements for more details.

No. 4.

VERMONT
STATE BOARD OF HEALTH
REGULATIONS

Relating to

PUBLIC BUILDINGS

PLANS FOR ALL PUBLIC BUILDINGS *to be erected must be submitted to the State Board of Health for approval.*

This includes School-houses, Churches, Theatres, Public Halls, Hotels, Tenement Houses, Apartment Houses and Factories, more than two stories high.

Such buildings must conform to the Regulations of the Board in respect to sanitary conditions necessary for the public health and safety.

DOORS SHOULD OPEN OUT from halls and all places of amusement. Stairways should be broad, have wide treads, low rise, and short runs between landings and be railed on both sides.

PROPER HEATING, LIGHTING AND VENTILATION is required on all public buildings. Sanitary plumbing must be installed, and buildings must be maintained at all times in a clean, sanitary and safe condition.

Fire Escapes

Plans for Fire Escapes must be approved. Escapes must be kept painted, free from snow and ice, always accessible, and easily located by signs and lights. Hotels must have fire gongs.

Motion Picture Houses

Special regulations govern floor area, cubic space, hall ventilation, booth ventilation, heating and cleaning.

No. 6.

umns. When Wanagimbel wants to tell the women of the community about this epoch marking reduction in the price of ribbon, he buys space in which to tell the story.

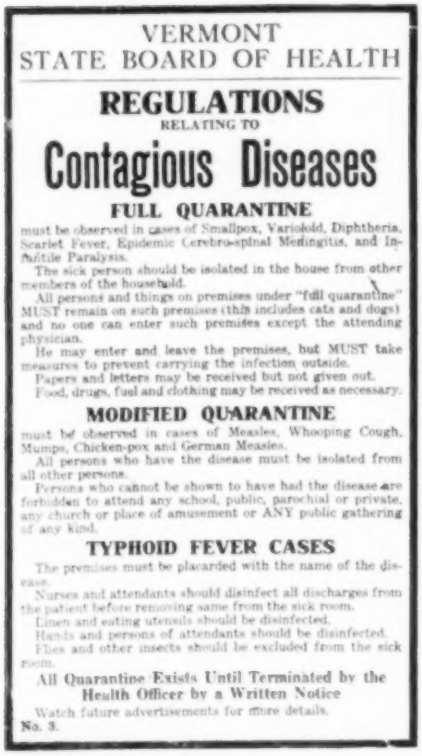
When Wanagimbel buys a city block upon which to erect a twenty-story department store that fact holds an interest for nearly every newspaper reader. It is most valuable publicity to Mr. Wanagimbel, but he does not even consider using his advertising space to tell the story. That is news because a large number of people are interested in it.

Take up expense. If you plan an exhibit do you use only lumber that you can get free, only cardboard that is given you and employ only such sign painters as will work for nothing? Do you hold your meetings only in the halls that are given you? Do you use only such envelopes as you can secure as a contribution to your work?

Of course not. You say: "This thing has got to be done. It is worth doing, therefore, it is a proper expenditure of the funds appropriated for my work. My exhibit will reach thousands of people with its instruction in health. That is an important public service. Therefore, I will spend some of my money for it." And of course you are right.

A New Publicity World.

If you approach the advertising question in the same spirit you will



VERMONT
STATE BOARD OF HEALTH

REGULATIONS
RELATING TO
Contagious Diseases

FULL QUARANTINE

must be observed in cases of Smallpox, Variolold, Diphtheria, Scarlet Fever, Epidemic Cerebro-spinal Meningitis, and Infantile Paralysis.

The sick person should be isolated in the house from other members of the household.

All persons and things on premises under "full quarantine" MUST remain on such premises (this includes cats and dogs) and no one can enter such premises except the attending physician.

He may enter and leave the premises, but MUST take measures to prevent carrying the infection outside.

Papers and letters may be received but not given out.

Food, drugs, fuel and clothing may be received as necessary.

MODIFIED QUARANTINE

must be observed in cases of Measles, Whooping Cough, Mumps, Chicken-pox and German Measles.

All persons who have the disease must be isolated from all other persons.

Persons who cannot be shown to have had the disease are forbidden to attend any school, public, parochial or private, any church or place of amusement or ANY public gathering of any kind.

TYPHOID FEVER CASES

The premises must be placarded with the name of the disease.

Nurses and attendants should disinfect all discharges from the patient before removing same from the sick room.

Linen and eating utensils should be disinfected.

Hands and persons of attendants should be disinfected.

Flies and other insects should be excluded from the sick room.

All Quarantine Exists Until Terminated by the Health Officer by a Written Notice

Watch future advertisements for more details.

No. 3.

Vermont State Board of Health

The Great White Plague

(TUBERCULOSIS).

Laws and Regulations Relating Thereto:

Physicians must report their cases to the Secretary of the State Board of Health at Burlington.

These reports must be on SPECIAL BLANKS, must contain certain data called for on these blanks, and must be made within

One Week!

These reports ARE NOT FOR PUBLICATION. They are required in order that we may know WHERE the White Plague is and HOW MANY people are attacked.

Without this data, it cannot be successfully fought.

No one who has the disease should

Ever Spit

except on cloths (that can be burned) or into spit cups (which are daily disinfected).

No one with tuberculosis shall attend

School

as pupil, teacher or janitor.

After death or removal, the premises or apartments must be

Disinfected

under the supervision of the Health Officer.

BLACK PLAGUE!

The people of Vermont should know that

Syphilis and Gonorrhoea

are as bad a scourge as tuberculosis. Our legislature has recognized this, and the facts about these diseases should no longer be suppressed or communicated in Whispers.

Good authorities rate them as the cause of more misery, suffering and death than any other diseases.

Until the LOCATION and NUMBER of these cases are known, they cannot be combatted.

They must be REPORTED to the Secretary of the State Board of Health. (See Act 218, Laws of 1912).

The Public should know that MORAL and PHYSICAL CLEANLINESS is imperative to avoid these.

Boys and girls should get proper instructions from their PARENTS and TEACHERS.

Early advice from competent physicians may save much mental and physical suffering to the victim and innocent persons.

Free examination for DIAGNOSIS of these diseases is provided by the State Board of Health at its laboratory. (See law)

Watch future advertisement for more details.

No. 5.

find a whole new publicity world open to you.

You will say: "Here are three newspapers with a total circulation of fifty thousand; they go into every English-reading home in this city. I can purchase a six-inch three-column space once each week for six months for so much money. This will put important health information before practically every family in town twenty-four times. Compared with any other means of accomplishing the same end, the cost of doing this is remarkably small. It is probably less than one tenth what it would cost to reach the same number with circular letters which I have found of limited efficiency. The only question for me to consider then is: Is it important that the people of this community should receive this information? It is, of course, and the news columns being unavailable, it is wise and expedient for me to spend my money for advertising space through which to convey it to them."

There is, of course, one fundamental difference between social service advertising and commercial advertising, the former actually has nothing to sell. The social service educational campaign is in all its essentials a selling campaign, with the exception that commodities do not change hands and no money comes into the treasury of the social agency by reason of its advertisers.

I am speaking here of purely educational advertising and not advertising for the purpose of raising money. In the latter case the parallel between commercial and social service advertising is almost complete. You are selling an interest in your work for contributions of cash or supplies. The only thing that differentiates your efforts from those of the department store is the fact that your profits are expressed in terms of civic improvement, social uplift and humanitarian service, while the profits of the commercial advertisers are expressed in bank balances.

In educational advertising such as most public health agencies would employ, the only return is an enlightened public.

Lower Rates Granted.

Newspapers recognize the difference between social service and commercial

"Bread, Please, for Our Helpless Friends So Far Away!"

Copyright, 1916, E. H. Lyman.
HALKA JAN
Homeless Waifs from the "Saddest Land."

The Children of Poland Need Your Help

They Are Starving and Freezing to Death

¶ It is the war's most appalling feature today—the extermination of a nation's young—its very life and hope.

¶ We are trying to save some. We can save many if generous Americans contribute generously at once.

¶ Through these printed words you hear the cries of the Polish children—though they are far away. You see their little hands outstretched.

¶ Surely you will give them bread. For their mothers have nothing to give them but their tears.

¶ Your aid—the little or much that you can spare—will allay suffering and save lives.

¶ And in some mother-heart there will be a prayer of gratitude for you, the unknown helper in the name of world-wide brotherhood and sisterhood.

Ah, if beside the dead
Slumbered the pain!
Ah, if the hearts that bled
Slept with the slain!
If the grief died! But no;—
War will not have it so."

NATIONAL AMERICAN COMMITTEE
POLISH VICTIMS' RELIEF FUND
FOUNDED BY IGNACE J. PADEREWSKI.
Hon. WILLIAM H. TAFT, (Former Pres. of United States) *Honorary President*
FRANK A. VANDERLIP, (Pres. National City Bank) *Honorary Treasurer*
JAMES M. BECK, (Former Ass't Att'y Gen'l of U. S.) *Chairman Ex. Com.*
AEOLIAN BUILDING, NEW YORK

T-O-D-A-Y *spells* LIFE

POLISH VICTIMS' RELIEF FUND,
AEOLIAN BLDG., NEW YORK:
I enclose $ ..... for food for starving children in Poland.
Please send official receipt.

Name .....

Address .....

Please make checks, etc., payable to "National City Bank for Polish Relief."

Cash contributions to Jan. 15, $216,825.04. Money is turned into food promptly. Food is not diverted. It reaches and saves the starving. This humanitarian work is entirely non-political and non-sectarian.

A strong appeal for funds in paid for space.

advertising by making substantial reductions in rates for the former. The so-called "charity rate" (a hateful term) is from thirty-five to sixty per cent. lower than the commercial rate. That reduction is based on the same principle that is back of the varying rates for various kinds of advertising. The space is more valuable to certain interests than to others and consequently should demand higher rates.

You will find that advertising has an educational force different from that of any other kind of publicity. It is more nearly equal to the force of the exhibit than anything else. If enough people could be persuaded to view exhibits, that would probably be the most valuable publicity medium.

The newspaper advertisement is comparable to an exhibit in its educational force for three reasons:

1. It tells its story to the people when they are in a frame of mind to listen.

2. It is in a place where people are accustomed to seek information.

3. The space is yours and you can say anything you please subject to certain restrictions as to public decency.

Mr. Truman C. De Weese, Director of Publicity for the Natural Food Company (shredded wheat), has converted a miniature hair mattress into a delectable article of food merely by the use of publicity. In his book, "Practical Publicity," he thus comments on the creative power of advertising.

"Before advertising was developed into a fine art, and before it became a factor in the commercial world, the business of the manufacturer and merchant was to supply the normal needs and desires of the human family. Merchandising was bounded by man's necessities and by his meager knowledge of the luxuries which he deemed within his reach. Modern advertising has made the luxuries of yesterday the necessities of today. It is something more than a 'drummer' knocking at the door of the consumer—something more than mere salesmanship-on-paper. It is a positive creative force in business. It builds factories, skyscrapers and railroads. It makes two blades of grass grow in the business world where only one grew before. It multiplies human wants and intensifies human desires.

"Advertising is not merely a method of diverting trade away from the merchant or manufacturer who does not advertise. Its function is not merely to pull business away from unprogressive competitors. It has 'news' value as well as psychological power. It not only supplies regular information at stated periods concerning the best and most economical methods of supplying the needs of a normal and comfortable existence, but, operating through well-established psychological laws upon the human mind, it gradually implants in multiplied mentalities the idea that certain things are needed which were never before regarded as necessary to human contentment or happiness. It enlarges and expands the horizon of man's daily life and experience by bringing to his attention new commodities designed for his comfort and convenience without which he would

have been perfectly happy in his ignorance; but, having learned of their existence, he cannot find it in his heart to be happy or contented until he possesses them. It is the constant reiteration of the so-called 'selling arguments' in connection with a product that convinces and finally impels the reader to purchase. The constant dropping of the water of publicity gradually wears away the stone of indifference. The human mind is so constructed that it is appreciably affected by repetition—and, after all, advertising is only repetition.

"The average man was perfectly willing to use an old-fashioned razor all his life. It apparently answered all the necessities of the tonsorial performance. The barber, indeed, still finds it a very satisfactory implement for removing the beards from the faces of his customers. But along came the advertising man to sow the seeds of dissatisfaction, and now we find safety razors in use by thousands. Men were gradually impressed with the idea that they were behind the times and were unnecessarily depriving themselves of a source of comfort and convenience. In years gone by these same men who have been converted by the safety razor were content to make lather for their faces in shaving mugs. Now, having learned the beauties of the shaving stick, they make their lather on their faces instead of in a mug."

Apply that admirable argument to public health with an open mind and you cannot escape the conviction that health workers have all too long neglected a most important publicity medium, if indeed, not *the* most important one.

A PROPOSED SCORE CARD FOR REFRIGERATORS.

W. A. Evans, M.D.,
Chicago, Ill.

REFRIGERATORS and iceboxes are sold on appearances. A prospective purchaser finds it practically impossible to get information as to efficiency. He must be guided by the appearance of the box and general statements. As a result a premium is put on appearance, and insulation and other essentials are penalized.

Dr. J. R. Williams has shown that a very large proportion of the refrigerators in use will not properly keep food and are wasteful of ice. Furthermore, he has shown that the construction of many boxes is not such as would indicate that they could be expected to properly keep food or to economize in ice.

The following score card emphasizes efficacy. Such questions as type of construction, kind and amount of insulation are not taken into account except as they register in performance.

The score card can be used by housewives, health departments, food departments, manufacturers and merchants.

The apparatus required consists of ice scales, thermometer, tape line and hygrometer, with each of which every home should be provided. If a hygrometer is not available, a suggestion is made for a shift in the rating.

In preparing this card I have had valuable suggestions from Dr. J. R. Williams of Rochester, New York, and H. C. Gardner of Chicago.

SCORE CARD FOR REFRIGERATORS.

(Front of Card.)

Name of manufacturer .....

Name or other method of designating refrigerator .....

Name and address of owner .....

	Perfect.	Allowed.
TEMPERATURE OF FOOD CHAMBER—	45	
Rate as follows:		
40 degrees and under 45		
45 " 43		
50 " 36		
55 " 23		
60 " 9		
Over 60 " 0		
Calculate proper ratings for temperatures between any two of these temperatures rated. Example—To rate 52, subtract 23 from 36. Divide 13 by 5. Multiply 2⅗ by 2. Add 5 to 23. Rating for 52 is 28.		
ICE ECONOMY—	20	
Rate as follows:		
Heat transmission factor 1 5 20		
" " " 2 0 18		
" " " 2 5 16		
" " " 3 0 14		
" " " 4 5 11		
" " " 7 0 6		
" " " 9 or over 0		
Calculate proper rating for a heat transmission factor between any two of these. Example—To rate a heat transmission factor of 4. Subtract 11 from 14. Divide 3 by 3. Multiply 1 by 2. Add 2 to 11. Heat transmission factor rating of 4 is 13.		
For method of estimating heat transmission factor see heading—Ice Economy—on back of card.		
HUMIDITY—	8	
Rate as follows:		
55 to 65 ..... 8 0		
65 to 75 ..... 7 5		
45 to 55 ..... 7 5		
40 to 45 ..... 7 2		
75 to 80 ..... 6 4		
30 to 40 ..... 6 0		
80 to 85 ..... 4 8		
20 to 30 ..... 4 8		
85 to 90 ..... 2 4		
20 and under 0		
CIRCULATION OF AIR—	7	
If any wall of the food chamber is moist subtract at least 2. If wall is very wet or more than one wall is moist, subtract at least 4. If air cannot freely travel from ice to food chamber and back again subtract at least 2.		
INTERIOR FINISH—	12	
If ease of cleaning is perfect, value 8.		
If finish is hard and non-absorbent, value 3.		
If color is white, value 1.		

DRAINAGE—		
Proper trapping, value 2.		
Proper drainage pipes, value 1.		
EXTERIOR FINISH—	5	
Total	100	

Signed—Name .....
Title .....
Date .....

SCORE CARD FOR REFRIGERATORS.

(Back of Card.)

INSTRUCTIONS TO SCORERS.

1. *Temperature Test.* To be entirely fair the refrigerator should be set near the center of a room which is free from drafts and in which the atmospheric temperature is kept at or near 80. The food box should be empty. The food chamber should be cold before the test is begun. The ice chamber should be approximately full. The ice should be in 50 pound cubes. The food chamber should not be opened except to read the temperature. At least four readings at intervals of not less than one hour should be taken and averaged.

A test under actual pantry conditions is reasonably satisfactory. In making a test under pantry conditions credit the refrigerator with a 5 per cent. raise in rating if the temperature of the pantry is between 80 and 90 and a 10 per cent. raise if it is 90 or over. If the inside door of the food chamber is opened oftener than once an hour credit with a 5 per cent. raise in rating.

2. *Ice Economy.* The food chamber should be cold at the beginning of the test. Weigh in the ice at the beginning of the test. Weigh the ice left at the end of the test. For the purposes of the test, the average temperature of the food chamber and of the pantry for the period of the test must be known. Also the number of square feet of the outside surface of the refrigerator.

To get the surface of the refrigerator, measure the front, multiply by 2. Measure one side, multiply by 2. Measure the top, multiply by 2. Add the three products.

Method of determining heat transmission factor:

Number of pounds of ice melted x 142; number of square feet of wall x difference between room temperature and food chamber temperature = heat transmission factor.

Example: A cheap refrigerator with 39.5 feet of external area maintained a difference of 18 degrees for 24 hours by melting 40 pounds of ice.

40 x 142; 39.5 x 18 = 7.99 heat transmission factor which gives the box an ice economy rating of 3.2.

3. *Humidity.* In making the humidity test a wet and dry bulb thermometer (hygrometer) is to be used. At least four readings are to be taken at intervals of not less than one hour. The humidities are to be averaged. If the tester is without a hygrometer and cannot test humidity he may add 8, or a proper proportion thereof, to the ratings for circulation of air.

4. *Circulation of Air.* Note whether the food chamber can be ventilated. If it can be, give credit for that fact in ratings. Note whether the cold air flows from the ice to the food and the warmer air from the food to the ice, or the probability of such flow continuously. Credit for efficiency on these points. Note moisture on walls, or of salt placed in food chamber. If the humidity be not taken and the humidity rating be added to circulation of air note especially evidence of condensed moisture on walls.

To demonstrate air currents, place lighted smudge at one or more points in the food chamber and also in the icebox and note the directions of the flow of smoke.

5. *Interior Finish.* Ease of cleaning refers to cleaning of the food chamber, and all shelves therein, the ice chamber and the drain pipes. Credit for removable shelves and rounded corners.

6. *Drainage.* See that the trap in the drain pipe is in working order and that no air can enter the interior through it.

7. *Exterior Finish.* Value on the basis of general appearance.

REPORT OF THE COMMITTEE ON UNIFORM ADMINISTRATIVE ACCOUNTING FOR HEALTH DEPARTMENTS.

DR. HAVEN EMERSON, *Chairman, New York;* DR. WILLIAM C. HANSON, *of the Massachusetts State Department of Health, who resigned before the present report was prepared;* MR. ERNEST C. MEYER, *of the International Health Commission, Washington, D. C.*

Public Health Administration Section, American Public Health Association, Rochester, N. Y., September, 1915.

ORGANIZATION and meeting dates were arranged in February, 1915. The assistance of officers of the New York State Department of Health, the Bureau of Municipal Research of New York City and members of the Advisory Council of the New York City Department of Health was enlisted and their services are gratefully acknowledged by the Committee. Especial appreciation is to be noted for the contributions of Dr. Alexander Brown of the State Department of Health, whose plan of functions and objects was adopted as the basis of this report.

The present statement of the Committee is made in the form of a progress report. It was evident from the beginning that, before any system available for general and uniform application could be adopted, agreement and approval for the functions and schedule of objects to be recorded by department accountants must be obtained.

To this end the Committee and its associates have devoted their meetings during the past six months. The functions of city and state health departments in the United States and Canada were studied and the following is believed to be as nearly as possible a complete list of the activities now carried on by such departments of state or municipal governments. It is not to be at all suggested that the list includes the activities of an ideally organized department of health, nor is it to be understood that the Committee approves of having all the functions here indicated under the jurisdiction of any or all health departments, but the duty which the Committee understands it was created to fill was to provide a common medium for expression by health departments so that they may have a basis for comparison and study of their respective costs.

We suggest that the Functions of Health Departments be divided into sixteen main schedules indicated by numbers I to XVI and that the Objects for which money is spent be divided into twenty schedules indicated by letters A to T.

Under the schedule of most of the functions, it has been thought best to include a sub-heading for supervision, this item representing the duties of the chief of a division or of an office, the staff or superintendent responsible for the particular activity under discussion or what is often included in the item of overhead charges. Also a sub-heading, miscellaneous, has to be inserted in many instances for the sake of including a record of activities and their cost, which may be of only rare or local importance or may be undertaken as experimental activities.

Research as a sub-heading is included in many schedules where it is already accepted as a present activity in some health departments, but it might properly be entered as a sub-heading in every schedule, for progress and development even of the best established public health functions will always depend upon study whether it be in office, field or laboratory.

SCHEDULE OF FUNCTIONS.

I. *Administration.*

1. Functional executive work. By this is meant the work of adjusting the various parts of the Department organization, and establishing coöperation for the sake of efficiency and economy of the service as a whole, preparing the annual budget, selecting employees.
2. Legal advice and representation.
3. Audit and accounting.

4. Records and reports (other than vital statistics and accounts), such as the weekly, monthly, and annual reports and records of progress of the work of various bureaus.
5. Issuance of licenses and permits.
6. Purchase, storage and distribution of supplies.
7. Administration and upkeep of buildings, and transportation service. By buildings is meant all premises used by the department in its various functions; offices, hospitals, clinics, laboratories. By transportation service is meant the vehicular service under department control or operated by department money, and not the cost of transportation by public carriers, either of person or supplies.
8. Miscellaneous.

II. *Vital Statistics.*

1. Supervision.
2. Keeping and tabulating of records (a) vital (b) mortality (c) morbidity.
3. Transcripts, as of birth and death certificates.
4. Control of disposal of the dead, *i. e.*, in transit, by burial or by cremation.
5. Identification of the dead and verification of the causes of death.
6. Research.
7. Miscellaneous.

III. *Control of Communicable Diseases.*

1. Supervision.
2. Notification and registration.
3. Personal quarantine. By this is meant the various activities directed to the control of the individual sick person or the carrier, *e. g.*, detention of the smallpox patient, or preventing the typhoid carrier from milking cows, or preparing or serving food. Disinfection of persons.
4. Occupancy quarantine. Example: Preventing the occupancy of buildings where people live, work or assemble when the buildings or premises are infected with rats, where plague is prevalent, or with body lice during a typhus epidemic, or where screening against flies and mosquitoes is not effective to prevent the conveyance of typhoid and malaria or yellow fever. Disinfection of premises.
5. Traffic quarantine. The control of traffic conveyances on land and water together with stations, docks and ferries, the fumigation of ships for rat destruction, the disinfection and cleaning of sleeping cars occupied by the tuberculous.
6. Immunization, as against typhoid and diphtheria.
7. Institutional inspection. Example: Inspection of orphanages and foundling asylums, in order to control measles, whooping-cough, diphtheria and scarlet fever. Inspection of prisons and reformatories to control tuberculosis and venereal diseases.
8. Venereal diseases: Diagnostic and advisory services.
9. Control of diseased animals; examples: Tuberculin testing of cattle; Mallein testing for glanders in horses; diagnosis of rabies and destruction of rabid dogs.
10. Epidemiological studies: Searching for carrier as cause of an epidemic of typhoid; searching out source of typhoid infection of water or milk supply of a town; detecting the carrier of diphtheria in a school class.
11. Research.
12. Miscellaneous.

IV. *Tuberculosis.* (Human) care and prevention of (except isolation and disinfection), which fall under III–2 and 3, or hospital care, which falls under XIV–3.

1. Supervision.

2. Notification and registration.
3. Home visits (by doctors and nurses, or investigations as to economic conditions).
4. Clinics or dispensaries.
5. Day, or day and night camps.
6. Miscellaneous.

V. *Child Hygiene.*

1. Supervision.
2. Prenatal work: Teaching personal hygiene to the expectant mother by doctor and nurses.
3. Supervision of midwives: Examination of applicants, supervision of their practice.
4. Supervision of maternity hospitals and day nurseries.
5. Infant welfare: All activities of welfare stations dealing with child from nursing age to school age.
6. Supervision of boarding out of children: Examination of fitness of women wishing to take infants or children to board and of the premises to be used, and following the health of children so boarded.
7. Supervision of institutions for children: Under this heading are to be included the supervision of the sanitary environment of the children, their hygiene of person, food and exercise and the physical examination of the children, but not the control of communicable disease among the children which falls under III–6.
8. Medical school inspection.
9. Clinics for school children, *e. g.*, trachoma clinics, refraction clinics, etc., for correction of physical defects found on school medical inspection.
10. Employment certificates: Examination of and certification of children of school age who wish to work.
11. Research.
12. Miscellaneous.

VI. *Occupational Disease.*

1. Supervision.
2. Notification and registration.
3. Inspection of premises to prevent industrial hazards.
4. Examination of workers.

VII. *Milk and Milk Products Inspection.* (This to include control of production and distribution of milk, cream, butter, cheese, condensed milk and ice cream.)

1. Supervision.
2. Barns and cow stables; control of construction, maintenance and occupancy of all places where milch cows are stabled and the scoring of same.
3. Creameries and pasteurizing plants; supervision of equipment and operation.
4. Transportation; Example: Control of icing of milk, time occupied from producer to consumer, vessels used and exposure during transit.
5. Stores: Supervision and scoring of all places used in wholesale and retail trade where these products are marketed.
6. Manufactories: Inspection and control of places where such milk products as butter, cheese, condensed milk and ice cream are made.
7. Miscellaneous.

VIII. *Meat, Fish, Food and Drug Inspection.*

1. Supervision.
2. Meats and fish, supervision of all stages from the slaughtering to the sale of meat of animals and supervision of sale of fish including condemnation of unsuitable meat and fish.
3. Shellfish: Supervision of sources of all oysters, clams, scallops and mussels, the care of them after they are gathered and the manner of marketing them.
4. Fruit and vegetables: Supervision of places of sale and products offered for sale.
5. Public markets: Supervision of their equipment and sanitary condition.

6. Grocery or food stores: Control of equipment, method of holding or exposing food for sale.
7. Bakeries, candy factories and bakery and confectioners' products: Supervision of premises where such products are made and sold and control of products as offered for sale.
8. Cold storage: Control of quality of food received, duration of holding, etc.
9. Hotels and restaurants: Supervision of places where food is cooked and served to the public.
10. Drugs: Supervision of standards of product and methods of distribution of medicinal agents.
11. Miscellaneous.

IX. *Laboratories: Chemical, Physical and Bacteriological.*
1. Supervision.
2. Analytical: Examination of water, air and drugs.
3. Diagnostic: Examination of sputum, blood, spinal fluid.
4. Therapeutic: Preparation and testing of products to be used in the medicinal or biological treatment of disease.
5. Research.
6. Miscellaneous.

X. *Public Health Education.*
1. Supervision.
2. Department publications, monographs, periodicals and special articles.
3. Newspaper publicity: Interviews, text for press bulletins.
4. Lectures: Read or delivered.
5. Exhibits: Fixed or traveling.
6. Miscellaneous.

XI. *Control of Nuisances.*
1. Supervision.
2. Privies: Control of construction, operation and maintenance.
3. Disposal of private sewage and industrial wastes.
4. Carcass removal: Control of collection and final disposition.
5. Insect extermination: Draining and oiling for mosquito extermination; anopheles surveys; destruction of flies and eliminating their breeding and feeding places.
6. Rat extermination: Rat proofing, rat catching and poisoning.
7. Spitting: Search for and arrest of offenders.
8. Common utensils: Towels, cups, forks, preventing their common use.

The preceding sub-headings may properly be grouped as productive measures directed to the prevention of communicable disease transmitted by means of the nuisances specified. The remaining headings deal with nuisances less directly concerned with the actual causation of disease.

9. Offensive trades: Limiting their location, controlling their operation to eliminate offense to smell.
10. Garbage and refuse removal: Control of method of collection, transportation and final disposal.
11. Smoke prevention: Control of escape of smoke, soot, dust and the fumes and other air-borne impurities of industry.
12. Noise prevention.
13. Offensive weeds: The destruction of poisonous or noisome weeds such as poison ivy and ragweed.
14. Miscellaneous.

XII. *Building Inspection.* All building inspection from the health standpoint may be understood to deal with the construction of the building, to insure a suitable fixed environment and the use of the building when constructed. These being functions not always served by the same department of government and in some instances not by health departments, it is necessary to subdivide the inspection of the various kinds of buildings into inspection for construction, such as the details of tenements and cow stables and inspection for occupancy as factories and lodging houses.
1. Supervision.

2. Schools.
   a. Construction
   b. Occupancy
3. Factories.
   a. Construction
   b. Occupancy
4. Lodging Houses.
   a. Construction
   b. Occupancy
5. Theatres.
   a. Construction
   b. Occupancy
6. Public buildings.
   a. Construction
   b. Occupancy
7. Tenements.
   a. Construction
   b. Occupancy
8. Baths and Laundries.
   a. Construction
   b. Occupancy
9. Hospitals.
   a. Construction
   b. Occupancy
10. Public Conveyances (except for quarantine which falls under III-4).
   a. Construction
   b. Occupancy
11. Mines.
   a. Construction
   b. Occupancy
12. Labor Camps.
   a. Construction
   b. Occupancy
13. Other Buildings (Miscellaneous).

XIII. *Water Supply and Sewage Disposal.*
1. Supervision.
2. Public water supply: Its protection and purification.
3. Private water supply: Protection and purification.
4. Sewage disposal (all except private sewage included under XI, 2 and 3).
5. Miscellaneous (privies unless involving engineering problems to be considered under control of nuisances).

XIV. *Hospitals and Dispensaries.*
1. Supervision.
2. Hospitals for communicable diseases.
3. Hospitals for tuberculosis.
4. Hospitals for venereal diseases.
5. Hospitals and clinics for treatment of special conditions such as trachoma, hookworm, whooping-cough.
6. Lying-in hospitals.
7. Foundling hospitals.
8. General medical and surgical hospitals.
9. Hospitals for alcoholics and drug addicts.
10. Hospitals for the insane.

XV. *Operation of Public Conveniences.*
1. Supervision.
2. Public comfort stations.
3. Public baths.
4. Miscellaneous.

XVI. *Miscellaneous Activities not Included in Previous Headings.*

SCHEDULE OF OBJECTS.

A. Salaries.
B. Fees.
C. Rent, taxes, insurance, repairs.
D. Heat, light, power.
E. Telephone, telegraph and postage.
F. Local transportation, vehicular and carfares.
G. Transportation, other than local.
H. Shipping.
I. Printing.
J. Exhibits.
K. Legal expenses.
L. Office supplies and furniture.
M. Scientific materials and supplies.
N. Drugs and chemicals.
O. Sera and vaccines.
P. Books and periodicals.
Q. Fuel.
R. Food.
S. Clothing.
T. Miscellaneous.

Since the presentation of this report, the Committee has continued its work with such success that the Bureau of the Census is likely to issue a pamphlet summarizing the results of its labor. Experimental application of the proposed schedule is being made under the direction of the Bureau of the Census.

The Committee would be grateful for critical comments and constructive suggestions from any or all health officers. Communications should be addressed to the Chairman of the Committee at 159 Centre street, New York City.

REPORT OF THE COMMITTEE ON STANDARD METHODS OF PREPARING DIPHTHERIA ANTITOXIN.

Committee, P. G. Heinemann, Dr. J. F. Anderson, Dr. W. H. Park, A. Parker Hitchens, Dr. H. D. Pease.

Presented before the Laboratory Section of the American Public Health Association, Rochester, N. Y., September 9, 1915.

THE Committee on Standard Methods of Preparing Diphtheria Antitoxin reported fully to the Association four years ago. During this period some progress has been made and for this reason a supplementary report is submitted.

Injections.—In some laboratories injections are made at shorter intervals than heretofore with the object of reaching the stage of productiveness in a shorter time. The amount injected is increased rapidly. Close observation of the horses will show whether the increase is too great. By this procedure the productive period may be reached in six to eight weeks. Antitoxin is given with the first dose or before. It is advocated by some to inject a given dose in a large number of places rather than give larger amounts in few places.

The treatment of abscesses seems to meet with some difficulties. Sterilizing the skin with tincture of iodine and again painting iodine over the needle hole seems to have good effect.

Where the blood is defibrinated special care has to be exercised to avoid contaminations.

Horses.—Doctor Anderson proposes application of the Römer test before immunization as this might be of assistance in selecting suitable horses.

Preparing Toxin.—Imported pepton is not on the market at present. In some laboratories domestic pepton has been used. It would be interesting to learn the results. On the whole, domestic pepton does not seem to yield toxins of as high potency as Witte pepton.

Refining and Concentrating the Serum.—Doctor Banzhaf's latest method is given as follows: The citrated plasma is diluted with one half its volume of water and saturated ammonium sulphate solution up to 30 per cent. saturation, *i. e.*, 7 ccm. of diluted plasma to 3 ccm. of saturated ammonium sulphate solution. The diluted plasma containing 30 per cent. saturated ammonium sulphate solution is heated to 60° C. in a water bath. The water is kept at 66° C. The length of time to heat the plasma ammonium sulphate solution up to 60° should take about two hours for the best results. It is essential to keep the pots covered during the heating to prevent loss of water by evaporation. It is also essential to stir the mixture frequently to insure uniform heating. When the mixture reaches 60° C. it is held at this temperature for about 15 minutes. The contents are filtered immediately. The precipitate containing the fibrin and euglobulin, although filtration has practically ceased, will retain considerable of the fluid which contains anti-

toxin. This fluid can be reclaimed by several methods. A practicable method is to press the precipitate in the same manner as the final precipitate of pseudoglobulin is pressed, but in this case catching the fluid pressed out. Another method of reclaiming the fluid from the precipitate is to add water containing 34 per cent. ammonium sulphate solution to the funnels containing the precipitates, thereby washing them. A more thorough manner would be to place the precipitates in the water containing the ammonium sulphate, mixing the whole well and refiltering. The resulting filtrate is then added to the main filtrate. The amount of saturated solution of ammonium sulphate in the combined filtrates may be regarded as 30 per cent. Sufficient saturated ammonium sulphate solution is added to raise the contents of the combined filtrates from 30 per cent. to 50 per cent. The resulting precipitate will contain the antitoxin. The precipitate is pressed and then dialyzed until free from ammonium sulphate. Trikresol is added to the finished product in the proportion of 0.3 to 0.4 per cent.

(Signed)

P. G. Heinemann, *Chairman.*
J. F. Anderson,
W. H. Park,
A. Parker Hitchens,
H. D. Pease.

MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH.

THE regular quarterly meeting of the Massachusetts Association of Boards of Health was held at the Brunswick Hotel, Boston, Thursday, April 27, 1916.

In the absence of the President, Dr. Frank A. Woods, the meeting was presided over by the first Vice-President, Dr. Francis X. Mahoney.

It was unanimously voted to accept the following applicants as members of the Association: J. Arthur Baker, 24 North St., Pittsfield; Timothy A. Butler, 497 Blue Hill Ave., Roxbury; Dr. R. D. Canedy, Board of Health, No. Adams; Bernard W. Carey, 4 Prichard St., Fitchburg; Dr. S. B. Grubbs, U. S. P. H. Service, Gallops Island, Boston; C. W. Horton, Health Officer, Swampscott; Dr. A. H. Mandell, 25 Sycamore St., New Bedford; Dr. Stanley H. Osborne, Elmwood Ave., No. Adams; John J. Pearson, Board of Health, Middleboro, Herbert S. Riley, Board of Health, Woburn; Dr. F. A. Robinson, Board of Health, Middleboro; Dr. M. V. Safford, U. S. P. H. Service, Long Wharf, Boston; J. H. Wheeler, Board of Health, Middleboro; Mr. Frederick Woods, Washington St., Wellesley.

It was announced that the Executive Committee had accepted an invitation from the Board of Commissioners of the Providence City Hospital to hold the July meeting of the Association in that city.

It was voted, on recommendation of the Executive Committee, that the Legislative Committee of this Association appear before the trustees of the State Hospitals for Consumptives to oppose any contemplated action for refusing care at State Sanatoria to advanced State cases of tuberculosis.

The following program was then presented:

Paper—Home Rule in Public Health, by Dr. Francis Geo. Curtis of Newton.

Paper—Legislative Measures of the Present General Court of Interest to Public Health Workers, by Dr. Geo. L. Tobey of Clinton.

Discussion on these papers was opened by Dr. F. G. Wheatley of No. Abington.

Discussion on the Report of the Committee for Standardization of Local Health Regulations was opened by Mr. Robert N. Hoyt of Manchester, N. H.

It was voted to recommend the following regulations for the control of communicable diseases.

It was voted to accept the progress report of the Committee on Standardization of Local Health Regulations for the Section on Communicable Diseases as follows:

PROGRESS REPORT.

Committee on Standardization of Local Health Regulations.

Section on Communicable Diseases.

Minimum Rules for Communicable Diseases.

Quarantine. The term quarantine as used in these rules shall be understood to mean that persons in the dwelling, tenement, apartment or other quarters under restriction shall not leave said premises, and that all other persons save the physician, nurse, clergyman and authorized health officers shall not enter such premises, except upon permission of the local health authorities.

Isolation. The term isolation as used in these rules shall be understood to mean the restraint of the patient and nurse or other attendants to a certain room or rooms apart from other members of the household in a manner satisfactory to the local health authorities.

Householder. The term householder as used in these rules shall be understood as meaning the head of the household, or the one in charge of the household, or the one in charge of a hospital, asylum, prison, jail, school or institution, public or private.

Tenement or Apartment. The term tenement or apartment as used in these rules shall be understood to mean the room or rooms or portion of a building used as residence by a single family or household.

Disinfection. The term, applied to premises, as used in these rules shall be understood to mean the cleansing, renovation and airing of the same, following the presence of cases of communicable diseases, and such additional measures as may be required by the local health authorities.

Quarantine As Applied to Tenements.

In a house containing one or more tenements or apartments, where each apartment has a separate exit, quarantine applies to a single tenement.

In a house containing one or more tenements, where there is a common entrance hall together with an individual exit, quarantine applies to a single tenement.

Note.—Under the foregoing school children from other tenements may continue at school in the discretion of the local health authorities.

In a house containing one or more tenements, all using a common entrance or exit, quarantine may apply to the whole building according to the discretion of the local health authorities.

School children from such apartment or tenement house shall be detained from school at the discretion of the local health authorities.

I. Reporting Diseases.

(1) Diseases Which Must Be Reported.

The following diseases have been declared by the State Department of Health to be dangerous to the public health and therefore must be reported to the Board of Health.

Actinomycosis
Anthrax
Anterior Poliomyelitis (Infantile paralysis)
Asiatic Cholera
Chicken Pox
Diphtheria
Dog-Bite (Requiring anti-rabic treatment)
Dysentery:
  (a) Amebic
  (b) Bacillary
Epidemic Cerebro-Spinal Meningitis
German Measles
Glanders
Hookworm Disease
Infectious Diseases of the Eye:
  (a) Ophthalmia Neonatorum (inflammation of the eyes of the new-born)
  (b) Suppurative Conjunctivitis
  (c) Trachoma
Leprosy
Malaria
Measles
Mumps
Pellagra

Plague
Rabies (Hydrophobia)
Scarlet Fever
Septic Sore Throat
Smallpox
Tetanus (Lock jaw)
Trichinosis
Tuberculosis (all forms)
Typhoid Fever
Typhus Fever
Whooping-Cough
Yellow Fever

(2) Physicians Must Report Diseases.

When a physician knows that a person whom he is called to visit is infected with a disease dangerous to the public health, he shall immediately give notice thereof in writing over his own signature to the Board of Health.—R. L. 75, Sec. 50.

NOTE.—It is recommended that in all cases of scarlet fever, diphtheria and smallpox and in cases of typhoid fever or septic sore throat when occurring in the household of any person engaged in the production, transportation or handling of milk, or when presumably caused by the consumption of infected milk, the written report shall, when practical, be preceded by an immediate telephone report to the Board of Health.

(3) Householders Must Report Diseases.

A householder who knows that a person in his family or house is sick with a disease dangerous to the public health shall forthwith give notice thereof to the Board of Health.—R. L. 75, Sec. 49.

II. ISOLATION AND SICK ROOM REGULATIONS.

(4) Duration of Isolation.

Isolation and quarantine shall continue until release by the Board of Health.

The minimum period of isolation or quarantine of a person having any of the following diseases (reckoned from the date when the notice of such disease is mailed) shall be as follows:

Diphtheria: Until two successive, negative cultures, taken from both nose and throat at least 24 hours apart have been obtained.

Scarlet Fever: Twenty-eight days and thereafter until discharges from nose and throat, ear or abscesses, cease.

Contacts shall be kept under observation till eight days from last exposure.

Measles: Till 10 days from onset of the disease.

Contacts shall be kept under close observation till 14 days from last exposure, unless known definitely to be immunized by previous attack.

Whooping-Cough: Subject to isolation for 3 weeks from date of report, and thereafter till characteristic whoop ceases.

Contacts till 14 days after last exposure.

Mumps: Till 3 weeks from report of disease; contacts till three weeks from last exposure.

Chicken Pox: Till skin and mucous membranes are normal.

Contacts till 3 weeks after last exposure.

Smallpox: Fourteen days, and until scabs are gone and skin is healed.

Contacts, till 21 days after last exposure, unless properly protected by recent successful vaccination.

Typhoid Fever: All persons recovering from typhoid fever should be instructed that they are a possible danger to the community and given the necessary information as to methods to be pursued by them to make that danger as little as possible.

German Measles: Contacts, till seven days from last exposure.

III. EXPOSED PERSONS.

(5) Maximum Incubation Periods.

Persons who have been exposed to diseases dangerous to the public health shall be deemed to be in danger of contracting such diseases unless immunized by an attack or by vaccines or unless free from symptoms of the disease during the following longest common incubation periods after the latest exposure:

Diphtheria: 8 days.
Scarlet Fever: 8 days.
Smallpox: 21 days.
Anterior Poliomyelitis: 14 days.
Chicken Pox: 21 days.
Measles: 14 days.
Mumps: 21 days.
Whooping-Cough: 14 days.

NOTE.—It is recommended that persons who have been exposed to diphtheria, scarlet fever or smallpox be under observation during the above incubation periods.

IV. Exclusion From School.

(6) Children Should be Detained from School During Quarantine and Isolation Periods.

Contacts should be detained from school, following last exposure, for a period corresponding to the incubation periods of the different diseases.

Readmission to school should depend upon presentation of a certificate from the local health authorities, or from the attending physician bearing the approval of the local health authorities.

V. Quarantine.

(7) Placarding of Dwellings.

The Board of Health shall give warning of the existence of each of the following diseases by posting a placard bearing the name of the disease near one or more of the entrances to the dwelling, apartment or room in which such case is located.

Anterior Poliomyelitis (Infantile paralysis).
Diphtheria.
Measles.
Scarlet Fever.
Smallpox.
Whooping-Cough.

The Board of Health shall give such warning of other diseases dangerous to the public health as shall be necessary for the protection of the public or as shall be required by law.

No person shall, without permission of the Board of Health, remove, obliterate or deface such placard, and the responsible head of the household shall immediately notify the Board of Health in the event of the removal, obliteration or defacement of such placard.

(8) Milk Bottles.

No milk bottles shall be removed from a house in which there is or has been a case of diphtheria, scarlet fever or typhoid fever without permission of the Board of Health.

(9) Public Libraries.

There shall be no interchange of books between libraries and quarantined households.

(10) Public Funerals Forbidden in Certain Cases.

No public funerals shall be held of any person who has died of diphtheria, scarlet fever or smallpox.

Note.—The purpose of this regulation is to prevent the spread of disease by the living members of the deceased's household who may be convalescent from the disease or who may have the disease in a mild or unrecognized form.

(11) Exclusion From Business.

No person shall engage in the handling of milk or food nor in an occupation bringing him into close contact with children after exposure to or while residing in a household in which there is a case of scarlet fever, diphtheria, typhoid fever or smallpox without permission from the Board of Health.

Other persons may be required to remove from the dwelling or to abandon their occupations if the nature of the isolation of the patient or the amount of contact occurring in the occupation are held by the Board of Health to require such action.

VI. Tuberculosis.

(12) Disposal of Sputum.

Every person suffering from tuberculosis shall dispose of his sputum in a manner which shall not endanger the public health.

(13) Notice of Removal.

Whenever a person with tuberculosis changes his residence, the attending physician, if there be one, or the active head of the household in which the patient resides forthwith shall notify the Board of Health of the change and both of the above mentioned persons shall be held legally responsible for the violation of this order.

Committee on Standard Local Health Regulations.

Clarence J. Allen, M. D., Winchester.
John A. Cook, Provincetown.
Edward Guild, M. D., Springfield.
Frederic W. Howe, Framingham.
L. A. Jones, M. D., State Health Officer.
Frank W. Jackson, Brockton.
George T. Lennon, Haverhill.
David J. O'Connell, Esq., North Easton.
Robert N. Hoyt, Wellesley, Chairman.

HOME RULE IN PUBLIC HEALTH WORK.

FRANCIS GEO. CURTIS, M. D.,
Chairman, Newton Board of Health.

Read before the Massachusetts Association Boards of Health, Boston, Mass., April 27, 1916.

UNLIKE many of the other states of the Union, Massachusetts has put the control of almost all matters pertaining to public health in the hands of the local boards of health, making them practically paramount within the borders of their own communities, and leaving the State Department of Health to act in an auxiliary and educational capacity.

Only along certain lines, which are specifically referred to in the public statutes, has the State Department of Health power to compel a local board to act, against its will, in matters strictly affecting its own community.

The State Board of Health, as it was then called, was created by Chapter 420 of the Acts of 1869, and Section 2 of that chapter, which defines the duties of the newly created board, says: "The board shall take cognizance of the interests of health and life among the citizens of this Commonwealth. They shall make sanitary investigations and inquiries in respect to the people, the causes of disease, and especially of epidemics and the sources of mortality and effects of localities, employments, conditions and circumstances upon the public health, and they shall gather such information in respect to those matters as they may deem proper, for diffusion among the people."

This law still remains upon the statute books as Section 4 of Chapter 75 of the Revised Laws, as amended by Chapter 480 of the Acts of 1903 and further amended by Chapter 104 of the Acts of 1912.

Some additions due to changed times have been put in but it remains practically the same and clearly defines the duties of the Board as advisory and educational. In the original law this was made even clearer by the introduction of a comma between the words "deem proper" and "for diffusion among" showing clearly that the reason for the gathering of the information was for diffusion among the people, that is educational.

Ten years later the State Board of Health was abolished by Chapter 291 of the Acts of 1879, and the State Board of Health, Lunacy and Charity was established in its stead. Section 3 of that Chapter provides that the newly established board "shall have all the powers and duties and may exercise all the functions of the boards abolished by section one hereof. . . ." Section 6 provides that the board shall exercise certain new functions, and exists today as Section 8 of Chapter 75 of the Revised Laws as amended by Chapter 670 of the Acts of 1913.

This section says: "If smallpox or any other contagious or infectious disease declared by the State Board of Health to be dangerous to the public health exists or is likely to exist in any

place within the commonwealth, the state board shall make an investigation thereof and of the means of preventing the spread of the disease, *and shall consult thereon with the local authorities.* It shall have coördinate powers as a board of health, in every city and town or with the mayor and aldermen of a city or the selectmen of a town in which there is no such board." Later on in the same section the state board may "require" local boards of health to give notice of cases of any disease dangerous to the public health.

At first glance it seems as if the phrase "It shall have coördinate powers as a board of health" gave independent power to the State Board but when taken with the statement made earlier in the section that it "shall consult thereon with the local authorities," it seems clearly to mean simply that the State Board is put on an equality with the local boards, so that it can consult, as an equal, with them "if smallpox or other . . . disease . . . exists," but gives it no authority over them. Furthermore, whatever it means, it applies only to localities in which smallpox or other diseases dangerous to the public health exist and only to methods of the prevention of the spread of such diseases and to nothing else.

Seven years later by Chapter 101 of the Acts of 1886 the State Board of Health was reëstablished and continued in existence until the present State Department of Health was created by Chapter 792 of the Acts of 1914.

It is natural that in the twenty-eight years which elapsed between the reëstablishment of the old State Board of Health and its abolishment, many statutes bearing upon public health matters and upon the relation of the state to the local authorities should have been passed but the principle of home rule in local affairs seems to have been kept in view always.

In Section 2 of Chapter 792 of the Acts of 1914 which in a way defines the duties and powers of the state commissioner of health, this principle seems to be reaffirmed in the last sentence of the section which says: "He may direct any executive officer or employee of the state department of health *to assist* in the study, suppression and prevention of disease in any part of the commonwealth."

In Section 5, there is a sentence which seems to give more power to the State Department, but I think it is more apparent than real. It is as follows: "The commissioner of health may, from time to time, order two or more of said district health officers to work in one district in order to study, suppress or prevent disease." The section continues; "Each district health officer shall have all the powers and perform the duties now provided by law for inspectors of health and further shall, under the direction of the commissioner"—do certain things, and "shall secure the enforcement within his district of the public health laws and regulations."

When we look to see what the duties of the district health officers may be, we find that by Section 3 of Chapter 537 of the Acts of 1907, every state inspector of health shall among other things "disseminate knowledge as to

the best methods of preventing the spread of such diseases, and shall take such steps as, after consultation with the state board of health and the local state authorities, shall be deemed advisable for their eradication."

Even in the so-called "Big" Milk Bill presented to this year's legislature, the State Department of Health has no power to act unless the local boards of health fail to do their duty, or being unable for certain reasons to do it, ask the state to act for them. Then, and not till then, can the State Department act in a matter directly affecting a local community.

There are, of course, certain functions which affect the whole state, and certain others in which the State Department with its larger detail of force can act more economically and more effectively than the local boards, and in these the law allows or directs it to act.

Thus the State Department of Health has general oversight of inland waters and streams and ponds used as sources of water supply, but even in such cases this does not in any way limit the power of the local board to act in order to prevent pollution. Later on in the same statute the State Department is directed to consult with the authorities of cities and towns and advise with them in regard to their water supply.

The supervision and licensing of cold storage plants is put in the hands of the State Board of Health by Chapter 652 of the Acts of 1912, but by Chapter 640 of the Acts of 1910, boards of health of cities and towns are directed to make frequent inspections of all cold storage plants, presumably within their own jurisdiction.

In many instances where the supervision of the same thing is given to the State Department of Health and to the local board, there may arise a question as to which board has the authority to act and enforce its orders, when these orders may differ. I have been able to find but one ruling on this matter, but as far as it goes it seems to settle the question in favor of the local boards.

In the case of the *Commonwealth* v. *Prince*, quoted in 203 Mass. 602, a local inspector of slaughtering who was ready to pass a carcass, condemned it at the behest of a state inspector, but afterwards returned to his original opinion and passed it. The state moved against the vendor and in the superior court the judge ordered a verdict of guilty against the defendant. The case went to the Supreme Court on exceptions, which were upheld. The comment on the decision says: "It seems that an inspector appointed by the state board of health under R. L., C. 75, Sect. 5, has no right to displace an inspector appointed by a municipal board of health under Sect. 102 of the same Chapter, who in the performance of his duty is engaged in the careful examination of carcasses at a slaughter house under the rules of the board of cattle commissioners and in stamping with an official stamp, a carcass which he is of opinion is wholesome and fit for food."

A member of the board of health of a town, appointed under R. L., C. 75, Sect. 102, by the board of which he was a member, to carefully examine under

the rules and regulations of the board of cattle commissioners the carcasses of animals slaughtered at a certain slaughter house, to stamp with an official stamp carcasses which he determined to be wholesome and to seize and cause to be destroyed any carcass which he determined to be unwholesome or unfit for food, was of the opinion that the carcass of a certain cow was wholesome and was prepared to stamp it when an inspector of the State Board of Health after an examination, being of opinion that the carcass was unwholesome, "declared the meat condemned," and at his request the inspector for the municipal board of health attached red tags to the carcass, signifying that it was condemned. After the inspector for the State Board had departed, the local inspector and one other member of the municipal board, the two forming a majority of the local board, made a careful examination of the carcass and declared it to be healthy and fit for food, and the local inspector thereupon removed the red tags and stamped the meat with the official stamp of approval. The meat was fit for human food. The owner sold the meat, and was arrested upon a complaint which charged that he "did knowingly sell for food a carcass . . . condemned as diseased by an authorized agent of the (State) Board of Health, said carcass being unfit for food by reason of disease." At the trial of the complaint in the Superior Court on appeal from a district court, the foregoing facts being admitted, the presiding judge ordered a verdict of guilty, and the defendant alleged exceptions. Held, that the local inspector at no time was ousted from his jurisdiction to determine whether to approve and stamp the carcass as fit for food, that therefore the sale by the defendant was justified, and that the defendant's exceptions must be sustained.

This seems to show that the local board of health is more powerful than the State Board of Health, provided that it is exercising its powers within the law.

We come now to the local boards of health and the functions which they exercise.

First and foremost comes the control of diseases dangerous to the public health. The State Department of Health, by statute, may declare what diseases are dangerous to the public health and as such come under the control of the local board, but over the methods of control it has little or no power. The local board can and does make its own rules for the care of such cases; it fixes its own method of isolation, fixes the length of the isolation, the method of release, the measures to be taken after release and practically everything connected with the management of the sick person and the members of the family. It can decide when a child may return to school after recovery from such a disease and it may even permit children in a family where such disease exists to continue at school if it sees fit. (R. L., C. 44, Sect. 6, as amended by C. 371, Acts of 1906, and further amended by C. 215, Acts of 1907.)

There is one disease over which it has apparently less control than others and that is tuberculosis, and even in

this it seems to the ordinary layman that the law gives the same power as it does in other diseases, but in actual practice it is found difficult to enforce its power.

The control of the local board over the sources of supply of the milk sold within its jurisdiction is practically absolute under Chapter 744 of the Acts of 1914 and it not only can, but, if it obeys the law, it must carry this supervision and control not only beyond the borders of its own municipality but beyond the borders of Massachusetts and in some cases even outside of the limits of the United States. By the provisions of this statute a local board of health in Massachusetts can enforce its orders in Canada!

Its power under the Statute in regard to nuisances (R. L., C. 75, Sect. 65) is almost unlimited and extends in many directions, and by a decision of the court (*Stone* v. *Heath*, 179 Mass. 385), the declaration of a local board of health that a nuisance exists will not be reviewed by the court until the orders of the local board have been carried out.

Under this section, according to an opinion of the Attorney General, a board of health may examine the children in a school if it has reasonable ground for the belief that cases of sickness (presumably of a disease dangerous to the public health) exist in such school. The opinion does not say to what extent the examination may be carried.

Another example of the power of a local board of health is shown in the decision in the case of *Newton* v. *Joyce*, quoted in 166 Mass. 83. In this case the board refused to grant a license for the use of a stable, ordered its use discontinued and applied for an injunction, to compel obedience to its order. The defendant claimed that the statute was unconstitutional because it deprived him of the use of his property without compensation, and gave no right of appeal from the decision of the board on the question of whether a license should be granted. The Supreme Court held among other things, that the law "is constitutional, although no provision is made for compensation to the owner and no right of appeal is given from the local authorities to whom the Legislature has seen fit to intrust the determination of the question."

Instances of the more or less absolute control of local boards of health over all matters affecting the public health within the borders of their own municipalities might be multiplied, but enough have been mentioned to show that they are practically paramount in such matters.

Massachusetts has shown her wisdom in thus placing this power and responsibility in the hands of the local boards, for it is self-evident that they are far better fitted to deal with local matters than the State Department of Health can possibly be.

It is no part of the duties of a state department to interfere in municipal matters, because, and I say it with due deference to the State Department of Health, it has not the intimate knowledge of local conditions to enable it to act intelligently.

It would be impossible, for instance

for the State Department of Health to draw up a system of rules that would be applicable to the cities of Boston and North Adams or to the towns of Brookline and Munroe Bridge.

Local conditions differ so greatly that it requires men absolutely familiar with such conditions to act intelligently. This fact was clearly shown, after the consolidation of greater New York, when an attempt was made to enforce in the Borough of Richmond, a semi-rural community, the rules made for the Borough of Manhattan.

It is perfectly proper for the State Department to lay down broad general principles for the assistance and guidance of local boards, but all the details of working them out and applying them to local needs should be left to the local boards themselves.

Furthermore, a local board is a much more elastic body than the State Department, and can settle the particular questions which may arise in its own locality, more promptly and usually more efficiently than can the State Department.

The State Department of Health and the local boards are reciprocating parts of the great machine for the protection of the public health; each has its own work to do.

The State Department can and does assist the local boards by furnishing information in regard to public health matters, and also the means of combating disease, which its larger personnel and greater facilities enable it to obtain, while the local boards, taking the general information furnished them by the State Department, use it as a basis for working out their own problems in their own way.

It appears, therefore, that the chief power over all matters of public health in their own communities lies in the hands of the local boards, and this being so, certain responsibilities, which may not be lightly laid aside, rest upon these same local boards.

The Legislature, in its wisdom, has ordained that every community in the Commonwealth shall have a body of men to care for the health of its citizens by decreeing that every municipality shall have a board of health either as a separate entity or as a function of the governing body. But, whether there is a separate board of health or whether the governing body acts as a board of health, when necessary, the power which the Legislature has given to boards of health rests in their hands and makes the members of a local board of health the most powerful body of men in the municipality. This power is given to them simply and solely for the protection of the health of the communities which they serve, and, if they fail to act in such matters to the best of their ability they are derelict in their duty.

It is a sad fact that many boards of health are thus derelict, for they exist in name only and do nothing to justify their existence. Every board of health should seriously consider the responsibility which rests upon it and resolve that it will take up the work which devolves upon it to the best of its ability, for if this is done we shall hear less of communities which do nothing along the lines of public health work, and there will be no excuse for any attempt to lessen the authority which the local boards now have over matters which affect their own communities.

LEGISLATIVE MEASURES OF THE PRESENT GENERAL COURT OF INTEREST TO PUBLIC HEALTH WORKERS.

DR. GEORGE L. TOBEY,
Clinton, Mass.

Read before the Massachusetts Association of Boards of Health, Boston, Mass., April 27, 1916.

THERE were a number of measures that were of interest to public health workers, but the time limit necessitates the selection of a few of the more important measures.

MEASURES RELATIVE TO TUBERCULOSIS.

Senate Bill 326, relative to the claims of cities and towns for the care of tuberculosis cases, was signed March 21, and is now Ch. 57 of the General Acts. This Act provides that: Every city or town which places its patients suffering from tuberculosis in a municipal or incorporated tuberculosis hospital in this commonwealth, or in a building or ward set apart by a municipal or incorporated hospital in this commonwealth, for patients suffering from tuberculosis, shall be entitled to receive from the commonwealth a subsidy of five dollars a week for each patient who is unable to pay for his support, or whose kindred, bound by law to maintain him, are unable to pay for the same; but a city or town shall not become entitled to this subsidy unless, upon examination, authorized by the trustees of hospitals for consumptives, the sputum of such patients is found to contain bacilli of tuberculosis, or unless the hospital building or ward is approved by said trustees, who shall not give such approval unless they have by authority of law, or by permission of the hospital to inspect the same at all times. It also provides that the trustees shall not approve claims for subsidy hereunder for more than thirty days prior to the date when notice is mailed to said trustees that a subsidy in any given case is claimed. Also that they may at any time withdraw their approval.

House bill 1983, providing for an investigation by the State Department of Health of non-pulmonary tuberculosis, has passed to be engrossed in both House and Senate.

This bill provides: That the State department of health is hereby authorized and directed to investigate the problem of non-pulmonary tuberculosis with special reference to children and adolescents throughout the commonwealth. To determine the existing number of cases of non-pulmonary tuberculosis and their location throughout the commonwealth. Also the number of hospital beds now available for the care of such cases, and the number of additional hospital beds needed for the proper care and treatment of such cases, and the proper location of such beds. And whether such additional beds, if needed, should be supplied by additions to or enlargements of existing general or other

hospitals, or by providing new institutions designed for the purpose of treating non-pulmonary tuberculosis cases exclusively. It provides that said department may hold such public or private hearings as it may deem proper during the course of such investigation, and shall submit a report to the next general court.

Registration of Physicians by Board of Registration in Medicine.

In its Annual Report, the Board of Registration in Medicine recommends a change in the law affecting the registration of physicians, which would require applicants for registration to furnish evidence that they had received the decree of Doctor of Medicine or its equivalent from a legally chartered medical school, approved by the Board of Registration in Medicine; the change in the existing law being the requirement that the medical school should be one approved by the Board. They also recommended that they give to the Board the right, after hearing by unanimous vote to revoke any certificate issued by it, and cancel the registration of any physician who had been found, after an investigation by the Board, to have been associated either as principal or assistant in carrying on the work of a physician with an non-registered practitioner of medicine who for hire engages in the work of a physician. These recommendations were both incorporated in House Bill No. 406, and were strongly opposed by the friends of certain schools and others. The Committee on Public Health reported no legislation upon these recommendations, which report was accepted by both branches of the Legislature.

Herbal Doctors.

A bill providing for the licensing by the Board of Registration in Medicine of persons desiring to engage in the business of selling, prescribing and administering of natural herbs, which bill was commonly referred to as the Chinese Doctor's Bill, was heard before the Public Health Committee on two separate days and was reported in the Senate with leave to withdraw, which report was first accepted by the Senate, but such action was afterward reconsidered and bill substituted for the adverse report. This bill would seem to open the way for practice under authority of the State, of a large number of persons who have not the training required of physicians. It is being urged particularly in behalf of a well known Chinaman. This bill, fortunately, was later killed in the house,

Anti-Vaccination Bill.

The usual effort to enact legislation to allow the attendance at public schools of unvaccinated children was made again this year with partial success. The bill was reported by the Committee on Public Health in the House and received two readings but fortunately was killed on its passage to be engrossed. A bill which proposed that a certificate that a pupil is not a fit subject for vaccination should not be valid unless the child had been actually seen and examined by the physician giving the certificate within

two weeks of the date of the certificate was urged before the Committee on Public Health, but was reported leave to withdraw, which report was accepted by both branches of the Legislature.

Legislation Affecting Milk.

An act giving inspectors of milk and collectors of milk samples, authority to take samples of milk intended for sale in their respective cities and towns whereever such milk is produced, stored, or transported, has been enacted.

A bill authorizing the granting of permits under the Provisions of Chapter 744 of the Acts of the year 1914, without an inspection of the place in which, and the conditions under which such milk is produced has been reported by the Committee on Public Health and appears to be on its way toward enactment without much opposition. It would seem that those who believe that milk should be passed by its bacterial count alone, have a substantial point upon those who believe the conditions under which milk is produced should be carefully considered in passing milk. The report of the Department of Health upon its investigation of the milk question was made to the Legislature, but unfortunately no provision was secured for the printing of the report, so that the vast amount of information contained in this report was not available to the public in time for discussion before the Committees of the Legislature. This report calls attention to the fact that the work of the supervision of milk is now carried out by the State Department of Health, the Dairy Bureau of the State Board of Agricultural, the State Department of Animal Industry, the United States Department of Agriculture and by local Boards of Health. The report gives a summary of the status of local milk inspectors which shows that about 20 per cent. of the total population in the state receive no protection from their local Boards of Health relative to milk. The balance receive some protection, but only 43 per cent. is adequately protected. The report further calls attention to the fact that if Boston is excluded from the list of cities and towns, 25 per cent. of the population receives no protection and only 20 per cent. is adequately protected from possible danger arising from the milk supply. It is well known that there is no law at present providing for state control of the milk supply of this Commonwealth relative to the public health. Milk production should be so supervised as to result in a maximum of cleanliness and safety with a minimum of interference with the milk industry.

The Department of Health bill recommends, first, a bill providing that no person should sell, exchange or deliver any milk not of his own production unless he had received a permit from the State Department of Health. The bill also gives to the Department of Health authority to make rules and regulations relative to the sanitary conditions of production, transportation, processing and distribution of milk. The bill also provides that all milk should be graded in either one of four prescribed grades,

and that the container in which milk was sold should be marked with a grade of the milk which it contained. Authority was given to the Department of Health and its agents to enter all places where milk was stored or kept for sale, and to prohibit the sale or distribution or cause to be pasteurized any milk which might be detrimental to the public health, by reason of disease about or near the premises where the milk was produced or kept for sale. This bill was printed by order of the Senate for the use of the Committees. It will be noted that this proposed bill gives all the authority prescribed in it to the State Department of Health.

The Committee on Legislation of this Association called the attention of the Health Department to certain provisions of the bill which seem to the Committee to interfere with the present administration by the local Boards of Health. The Department, after discussion of that bill with the Committee on Legislation of this Association and others, requested your Committee to assist in the redrafting of the bill. In compliance with that request, members of the Legislation Committee of this Association spent several days with the officials of the Department of Health and others, in drafting a bill relative to the inspection of milk. The bill, which was finally agreed upon as a result of this conference, was presented to the Committee on Public Health and Agriculture by the Committee of Public Health and is known as the Department of Health Bill. The bill provides that the Department of Health, after public hearings, is authorized to frame reasonable rules and regulations relative to the sanitary conditions of producers and distributors of milk which rules shall take affect after the approval of the Governor and Council. It gives to the State Department of Health authority to establish grades of milk, based upon butter-fat content, sanitary condition of dairies and bacterial content. It also gives the State Department of Health the power to fix methods of pasteurization. The bill provides that after the establishment of such grades, if milk is graded, it shall be graded according to the standards established by the Department of Health, and gives to the local Boards of Health authority to require milk offered for sale within their jurisdiction to be graded whenever the interests of the public health render it necessary and desirable. It is also provided that no license under the provisions of Chapter 443, of the Acts of the year 1909 and no permit under the provisions of Chapter 744, of the Acts of the year 1914 shall be issued to any one who has not complied with the rules and regulations established by the State Department of Health. The bill also gives to the local Boards of Health authority to require the pasteurization of milk offered for sale within their jurisdiction whenever the interests of public health shall render it necessary or desirable, but no repasteurized milk shall be sold or offered for sale within the Commonwealth. Provision is made that local Boards of Health shall enforce the provisions of the act, but if the local Boards of Health shall neglect or refuse to enforce the pro-

visions of the act, the State Department of Health shall have the power to enforce such provisions. Provision is also made whereby a Board of Health of a town may request the Department of Health to take over and exercise the power and duties conferred upon them by the provisions of the act and by the provisions of Chapter 744, of the Acts of the year 1914, and in such case the State Department of Health shall take over and exercise such powers at the expense of the town.

After long hearings upon this matter, the Committees on Public Health and Agriculture, sitting jointly, reported no legislation. A movement is on foot to substitute the Department of Health Bill for the adverse report, but at the time of the preparation of this paper it is uncertain with what success this movement will meet. It will be noted that the present bill is a substantial change from that first recommended by the Department of Health, and it is considered by many that the present bill is the best solution of the much discussed milk problem which has yet been offered.

The report of no legislation upon the recommendations of the Health Department by the Public Health Commission upon this bill was accepted in the House yesterday without debate. I am informed that the gentleman who was to have made a motion to substitute the Department of Health Bill for the adverse report was not present. I understand that this report now goes to the Senate, and that there will be an opportunity to substitute the bill for the adverse report in the Senate.

Discussion.

Dr. Frank E. Wheatley: I was requested by the Secretary to open discussion on the two papers to which we have just listened. You have heard a résumé of existing health legislation, from which it appears that the local board has supreme authority in each municipality, and Doctor Curtis apparently believes this to be a wise arrangement.

I note, however, that he regrets that local boards in so many places are inefficient and inactive, and this may be suggestive of a doubt in his mind as to the wisdom of giving local boards supreme authority in all cases.

With a board as efficient as that of Newton, local affairs are perfectly safe, but in some of the less thickly populated parts of the Commonwealth, conditions are not as good. There are some towns where Boards of Health are inefficient and do nothing unless compelled to by state law or public opinion.

I think a provision giving the State Board authority where local boards refuse, or neglect to act, would greatly increase the efficiency of our health laws.

We all believe in the principle of Home Rule, but we should not insist upon it if by so doing the lives of helpless women and children are endangered. The underlying idea of the legislation providing for State Health Inspectors, was to bring the State Board of Health in contact with communities where local boards were inefficient or inactive. The bill as first drawn would have given the State Board of Health absolute authority over local boards. It was thought wise, however, not to press such legislation at that time. The law, however, does provide that the State Board of Health may order two inspectors into any district in the state, and that they may adopt and enforce such regulations as seem necessary. This power of the State Board apparently is rarely, if ever, exercised. It is well to remember that we now have a paid Board of Health, and therefore we can reasonably increase its duties.

When Doctor Walcott was chairman of the unpaid Board he was accustomed to say to members of the legislature who were interested in health legislation, "Don't throw any more duties on our Board. We are willing to give our advice, but don't desire executive authority." While I have great respect for Doctor Curtis' opinion, I think he has overdrawn the advantages of absolute local control.

In the paper read by Doctor Tobey you have a résumé of what the legislature has done in health matters so far this year. In a negative way we are fortunate. The Anti-Vaccination bill has been killed, and it probably will be killed as long as men who have heard Doctor Durgin's masterly presentation of the subject have any influence with the legislature. I presume the time will come when the Compulsory Vaccination Law will be repealed.

The Milk Bill which has been killed this morning was perhaps the most important piece of health legislation brought up this year, and I greatly regret its failure. When we remember the number of diseases that are directly caused by infected milk, and that many deaths result each year from the condition of the milk supply, we can hardly exaggerate the importance of legislation of this kind. I believe the proposed bill was well calculated to meet the situation.

The bill providing for various standards meets an objection which is often urged, namely: that milk having a less fat content may still be healthy milk. Two distinct questions are involved, infection and nutrition.

Until the Commonwealth will consent to the enactment of some legislation of this kind, Massachusetts can hardly point with pride to her laws on public health.*

*I am informed that a new bill is now pending.

F. G. W.

Book Reviews.

Mosquito Control in Panama. *By J. A. Le Prince and A. J. Orenstein. Pp. 335, ills. 100. G. P. Putnam's Sons, 1916. Price, $2.50.*

For many years past the world at large has known of the wonderful success attained in Panama in the control of mosquitoes and their attendant tropical diseases. Till the present, however, it has been impossible for the general public to obtain any coherent account of the whole problem, the methods by which it has been solved, and the complete results that have so far been obtained.

The authors of the present volume have supplied this deficiency by a carefully arranged synopsis into which is woven a great mass of details covering the varied aspects of the extremely complicated problem presented by the mosquito fauna of the Canal Zone. Aside from General Gorgas himself, no other person could be so well fitted as Le Prince, who had previously taken part in the cleaning up of Havana, Cuba. As junior author, his first assistant, Orenstein, has collaborated in the preparation of the book.

Since the malarial mosquitoes and the yellow fever mosquito are widely different in their occurrence and behavior, the volume is divided into two parts, the first including sixteen chapters on the "Anti-malaria Campaign," and the second, seven chapters on the "Yellow Fever Campaign."

In the portion dealing with malaria there is an account of the results accomplished previous to 1904 in Havana and a description of the situation on the Isthmus in 1904 previous to the American occupation. The latter illustrates well the discouraging conditions which were faced at the outset and will perhaps be rather surprising to those unfamiliar with the tropical jungle and with life in the American tropics. The physiographic and meteorological conditions on the Isthmus, the species of Anopheline mosquitoes and the Anopheles propagation areas are given considerable space and these are followed by a description of the way in which mosquito eradication was attempted. The latter include no less than eight methods of attack, only one of which refers to the destruction of adults.

The propagation areas are of the most varied character, including such diverse situations as seepage on hillsides, borders of small streams, pools in intermittently flowing streams, hoof-prints in pastures, and artificial (often temporary) accumulations of water of many kinds. Of the eight methods applied, one was usually particularly suitable for given conditions, although many cases are cited where a combination of two or more was found necessary. Some areas were filled with soil, but the conditions under which this was advisable could be ascertained only after careful examination. Drainage was used where economical, and oiling was very extensively indulged in where temporary measures were a necessity. Many situations where oil was not satisfactory were treated with miscible oily preparations (larvicides), and to meet these conditions an improved combination, the "Panama Larvicide," had to be perfected.

Some of the greatest difficulties encountered were due to the nature and growth of the tropical Isthmian jungle, and the methods by which these were overcome receive special mention at some length.

In the chapter relating to the results accomplished by the anti-malaria campaign the authors give a résumé, illustrated by several charts, which show graphically the astonishing reduction of malaria resulting from the mosquito-war. Taken in connection with the great difficulties of the original situation, these should certainly be seen by any who are skeptical as to the feasibility of anti-mosquito work in other parts of the world where conditions are so much more favorable for work.

The part of the book devoted to yellow fever is less extensive than that relating to malaria, but like it is introduced by a preliminary chapter on the previous efforts at Havana. The reason for the curtailment of the yellow fever section is very apparent, however, for in spite of the great importance of this disease in the construction of the canal, the breeding habits of the Stegomyia mosquito are such that the control of this species is a far simpler matter than that of the Anopheline vectors of malaria. Thus, while the most spectacular and no doubt also the most important disease affecting the ultimate completion of

the canal was yellow fever, the greatest difficulties were encountered in combating malaria.

From various references here and there in the book it is very evident that the attitude of many contractors and bosses engaged in construction work on the canal was not conducive to the easy application of sanitary measures, nor as the authors abundantly show, was it always to their own benefit in the economic utilization of labor. Such short-sighted policy is greatly to be deplored, but let us hope that the present exposition of sanitary efficiency may help to dispel at least some misguided ideas of commercial efficiency.

The illustrations which are scattered abundantly through the book serve to bring the reader into close touch with conditions in the Canal Zone, while numerous charts, diagrams and maps elucidate certain sections of the text. Owing to the great mass of details which have been incorporated, the style of the authors is in places somewhat jerky and there are many abrupt transitions in the sequence of ideas embodied in single paragraphs of the text.

The authors have certainly produced a volume which may be read with benefit by anyone and may serve as a handbook for those to whom mosquito control is delegated.

C. T. Brues,
Bussey Institution, Harvard University.

Campaign for Clean Milk. *The National Clean Milk Society, 34 Norfolk St., London W. C. (St. Catherine Press.) Pp. 51, 6 ills. 1s. net.*

This publication is a reprint of articles recently published in the London *Observer*, and is intended as a means of stimulating public interest in the movement for clean and wholesome milk supplies. To the American reader it is chiefly of interest as reflecting English conditions and ideals.

It may surprise some to read that "in the United States far greater attention has been paid to the milk problem than has been done here." The passage of the Milk and Dairies Act of 1915 has, however, stirred interest and led to consideration of ways and means. Much stress is placed on tuberculin testing, the score card, and the object of high-grade raw milk. American practice has been consulted. The simple methods of milk production championed by Doctor North are given credit, though without discussing their bearing on the validity of the score card. The grading of market milks is given brief mention; in England the idea has as yet apparently made no practical progress. Pasteurization is succinctly treated, and it is intimated that "the decision will have to be made as soon as the milk problem is properly tackled, whether it will be safer to have our milk pasteurized under proper control or to be sold raw." The brochure closes with a summary of the society's proposals, involving nothing unfamiliar to the clean milk movement in the United States.

J. Scott MacNutt.

Health Department Reports and Notes.

REPORTS.

Duluth, Minnesota.

It is with a feeling of satisfaction that the Director of Public Health of this city of some 91,000 population presents his annual report of the Board of Health, for "more has been accomplished during the past year than at any time since its establishment." A crude death-rate of 10.02 is reported for the year, showing a considerable reduction from the rate of 11.83 of 1914, and a continuous reduction since 1906 when the death-rate was 21.18 per 1,000 population.

Scarlet fever seems to have been the greatest problem during the past year reaching the epidemic proportion of 436 cases, though fortunately the deaths were only two. There were 74 cases of diphtheria with a high toll of ten deaths. Every effort is made by the department to induce cases of both the above diseases

to go to the hospital, since it is believed that this is the best way to maintain efficient isolation. There were only 16 cases of smallpox with no deaths in comparison with 157 cases in 1914, yet the department feels that this is false security, since only 34 people submitted to vaccination during the year, and fear is entertained in regard to the young children who enter school during the next year or two unvaccinated. Cases and deaths from typhoid fever were reduced about fifty per cent. The 137 cases of whooping-cough with nine deaths again shows forcibly how wrong the impression is that this disease is in the class of minor contagious diseases.

Among the suggestions put forward by the Division of Contagious Diseases, the following is well worthy of note:

"I would like to suggest to you the advisability of abolishing fumigation after contagious disease, and also the modification of our quarantine regulations so as to allow the wage earner of the family to attend his work while living in the same house with a contagious case, provided that the case is isolated in a separate room and that the wage earner agrees not to come in contact with the patient."

The report of the bakery inspector shows that considerable work is being done in the inspection of such food-stuffs and that on the whole harmony prevails between the department and the bakers, confectioners, and restaurateurs. He feels, however, that ordinances must be passed to make compulsory the covering of all bakery goods, candies, etc., and specifically prohibiting the use of roller towels in public places.

The Director of Public Health urges for the future the consideration of the matter of construction of a city hospital and the necessity of a detention building in which to detain suspected cases prior to diagnosis. Furthermore fear is felt in regard to the spread of disease among the foreigners, a great number of whom are settling in the western part of the city, and as a consequence an ordinance governing boarding houses is urged.

It would seem more advisable to arrange the tables of vital statistics in a more convenient and consistent manner, since it is at present difficult to ascertain certain facts without a detailed examination. It is further desirable that more attention should be given over to the discussion of the tables and certain phases of the health work. It is unusual to find in the report of a city of this class with such an undoubtedly creditable health record the omission of discussion on such subjects as infant mortality and tuberculosis.

Perth Amboy, New Jersey.

The annual report of the Board of Health of the City of Perth Amboy is prepared "as far as possible . . . in a manner that anyone desiring information regarding a special part of the work may find it in the following pages without difficulty." This seems a logical but often a neglected standard for a health department report. This city has well lived up to such a standard and presents a clear and concise report. The vital statistics are recorded for the last six years thus affording ample opportunity to see the advance in health control from 1910–1916. From a population of approximately 39,700, the death-rate for 1915 is 12.73 per 1,000, lower than at any previous time in the last six years, and a reduction of 1.56 from the preceding year. The deaths from communicable diseases were slightly lower than in the other years but the health department feels that the number is "entirely too high," particularly in regard to diphtheria and measles which reached epidemic proportions. There were no deaths from typhoid fever, scarlet fever or whooping-cough. In accordance with the more modern theory of health control, fumigation has been abandoned, and in its stead, a visiting nurse is being sent to the homes where a case of contagious disease has recovered to advise the family as to the best methods of disinfection.

The first several pages of the report of the Registrar of Vital Statistics is devoted to impressing the citizens "with the great importance of an accurate and complete record of all marriages, births and deaths." Thus in compliance with the recent resolution of the State Board of Health of New Jersey, a warning is made of the adoption of stringent measures for the prosecution of persons negligent in making reports.

The infant mortality rate per 1,000 living births is 147.77, showing a continuous reduction since 1910. This is undoubtedly the direct result of the employment of nurses to go about the city and visit homes wherein there were babies, giving such information and advice as was thought necessary.

Much attention has been given to securing clean, safe milk and wholesome food supplies, and several excellent ordinances have been passed for its efficient control.

In outlining the work for the future the health officer recommends the following needs—institutions for the care and treatment of tuberculosis and other contagious diseases, improved methods of sewage disposal and extension of the existing system, and improvement in the method of garbage disposal.

Worcester, Massachusetts.

The annual report of the Board of Health of this city announces the lowest death-rate of half a century. Starting with a recorded death-rate of 30.68 in 1864, this city of 170,000 now shows a rate of 14.53 per thousand population. Unfortunately Worcester must also reckon in the deaths from the state insane hospital which contributed 204 deaths to the annual toll. Correcting for this number, the rate becomes 13.33.

There were only 140 cases of scarlet fever during the year with a mortality of 2.08. Seventy two cases of typhoid fever were recorded with a mortality rate of 12.5. Diphtheria reached rather high proportions with 342 cases with a mortality rate of 6.14. The department calls attention to the fact that the fatality from this disease is often caused by delay in summoning physicians in cases of sore throat in children, because "so much of the poison is absorbed before antitoxin is administered, that the beneficial effect is lost."

The report of the school nurse shows that very valuable work is being done for the school children and their families. To the nurse are referred for investigation and treatment a variety of defects and diseased conditions, such as cuts, sores, bruises, skin affections and diseases of the eyes, ears, nose and throat.

The chief interest of the year was directed towards the new Department for Tuberculosis. The Putnam ward for advanced cases of tuberculosis was opened to admit patients in December, 1914, and during the year 36 patients had been admitted. Few cities of this class, or even in the higher classes, have established municipal wards for advanced tuberculosis, and this city is justly proud of its accomplishment. In general, the tuberculosis nurse reports 349 new cases of pulmonary tuberculosis during 1915 and 164 deaths. In the review of the nationality of those infected, it is interesting to note the preponderance of the Irish people in proportion to the per cent. of population. Of the 349 cases, 98 were American, 91 Irish, the next highest being Swedish with 38 cases.

In glancing over the financial statement for the year the most striking point is the expenditure of over twenty-five hundred dollars for fumigation. This represents roughly over eight per cent. of the appropriation. In view of the fact that the more modern departments are abandoning this procedure for education and thorough mechanical cleansing, this money could well be diverted from its present use and applied with more effect to some other phase of the department's work.

NOTES.

Chronic Diseases of the Heart, Kidneys, and Arteries, from the Standpoint of Etiology, Prevalence, Mortality, and Prevention.—Dr. Charles Bolduan, director, Bureau of Public Health Education of New York City, presents in the April number of the *Health Department Bulletin* an exhaustive study of the preventive diseases of adult life.

"While the general public, and to a large extent even the physicians, feel quite satisfied with the death-rates now prevailing, and while the latter frequently point with pride to the marvelous reduction in the death-rate in the past twenty years, closer students of public health have for some time realized that much still remained to be done. By analyzing the death-rate in detail, they have been able to show that most of the health work of recent years has been

directed to the saving of infant and child lives, while practically nothing has been done to prolong adult life."

Doctor Bolduan enters into a detailed statistical study concerning the individual diseases of the organs mentioned. What interests us as health administrators is the large number of closely related chronic diseases, namely chronic organic heart trouble, chronic Bright's disease and arterio-sclerosis. The relations of these diseases from the point of view of preventive medicine to age, sex, social environment, alcoholism, occupation, overeating, etc., are taken up in detail.

Doctor Bolduan devises a plan of education and states that as matters now stand "the two most promising means to pursue to control the diseases discussed in this paper are: (1) The organization of boards of sanitary control to watch over the health of employees, and (2) the extension of work directed against the venereal diseases. Neither of these will be possible without the hearty and intelligent coöperation of the general public, and it is to this end, chiefly, that educational measures must be directed.

"At the outset it is imperative to rouse public opinion. Very few, even among physicians, realize the tremendous importance of the problem presented. As in all other public health activities, the extent and effect of any organized attack on diseases of the heart, kidneys and arteries is determined largely by financial considerations. 'Public Health Is Purchasable' is the motto of the Department of Health of the city of New York, a motto which is definitely applicable to our problem. It is safe to say that money spent on a well-organized campaign of public education concerning diseases of the heart, kidneys and arteries will bring even greater returns than that achieved by the campaign against infant mortality.

"Assuming, then, that public opinion has been aroused through an 'Exhibition of Adult Hygiene'—it is important

(a) To keep it aroused;

(b) To make use of it for the institution of corrective measures.

"Both of these activities devolve principally on the health authorities.

"This work may be carried on in a variety of ways, and each must be employed: Newspaper and magazine articles, both in the form of news items and special write-ups. Popular leaflets, distributed through schools, churches, settlements, labor organizations, shops and factories, and wherever occasion offers. Special circulars of information, of a type similar to government bulletins and giving more extended information concerning particular topics, in form adapted to intelligent lay readers. Scientific articles in medical journals, etc., for the education of physicians and others.

"Noon-day fifteen-minute popular talks in shops, offices and factories. The personal element thus introduced makes them more effective than leaflets. Moreover, such talks always should be reinforced by a supply of literature, passed among the audience.

"Evening lectures—preferably illustrated—before larger gatherings in schools, settlement houses, parish houses, clubs, etc. Literature to supplement the work of the lecture.

"Talks to school children—at opening exercises. (These should deal largely with the rôle of scarlet fever and colds in production of kidney and heart disease.)

"Talks to high school students. The graduating class should learn something about venereal disease, and its relation to the degenerative diseases of later life.

"Traveling exhibits, giving a general view of the problems of adult hygiene. Such exhibits should be simply constructed, so that they can be readily moved from place to place. Vacant stores, settlement houses, schools, churches, etc., can be obtained, rent free, for their display.

"Museums of anatomy, modeled after the museums of the venereal quack, would attract many inquisitive passers-by and undoubtedly exercise a valuable educational influence.

"Periodic physical examinations of employees undoubtedly constitute most effective measures for the control of the degenerative diseases. Such examinations are preventive, corrective and educational in their influence. A little harder to introduce, perhaps, than noon-day talks, or the distribution of leaflets, they nevertheless are so extremely valuable that every effort should be made to secure their adoption by all employers of labor.

"While the results of an educational campaign such as here outlined will not be immediate, there is no doubt at all that they will be certain and lasting. Persistent campaigning along these lines should effect a reduction of two points in New York City's death-rate within ten years—surely a rich reward and one worth striving for."

Epidemic Poliomyelitis in Vermont.—The state of Vermont, during 1914-15, experienced the severest epidemic of infantile paralysis that has ever appeared there. A review of this epidemic by Doctor Caverly, president of the State Board of Health, appears in the June *Health Bulletin* of that state.

Going back over the previous history of this disease in Vermont, it appears that in the summer of 1894 the first considerable outbreak to be reported in this country appeared there, comprising 132 cases. From 1894-1910 nothing approaching an epidemic of this disease appeared, but in 1910, following a severe epidemic in Massachusetts, the neighboring territory in Vermont was invaded, causing 69 cases; 1911, 1912, and 1913 reported 27, 13, and 47 cases respectively. The disease seems to have persisted in the same general localities.

The first cases in 1914 appeared in the same village as the last cases in 1913, in July, and following these 306 cases developed, almost 90 per cent. of the cases appearing in northern Vermont. The division of cases by sex did not differ materially from the usual experiences in these outbreaks, 55 per cent. males and 45 per cent. females. Children under four years of age gave the greatest number of cases, and persons in the age groups above twenty gave the greatest percentage fatality. The mortality of the outbreak was 17.3 per cent.

Paralysis appeared a little earlier in this series than ever before observed, for in 53 cases paralysis appeared on the first day, and in 64 cases on the second day. Throughout the whole epidemic there were many so-called abortive cases, bearing the initial symptoms of the disease, yet which recovered without paralysis. Doctor Caverly regards such cases as surely important features of all outbreaks of this nature and that "early diagnosis and control of these must have undoubtedly an important bearing upon the prophylaxis of epidemic poliomyelitis."

No contact could be traced with paralyzed, abortive or carrier cases in 238 instances. There are then recorded notes and tables bearing on the communicability of this disease with the conclusion that:

"The above facts may or may not indicate a *communicable* disease. If, as seems likely, many 'potential agents of dissemination' occur in family- as well as community-life under epidemic conditions, the disease may be classed as really communicable. The bare fact, however, of only one or two frank cases of the disease often occurring in large families, indicates on the surface slight contagiousness."

There then follows much discussion with charts and tables of the geographical distribution, climatical, seasonal and other conditions which might influence the extent of such an epidemic.

It is satisfying to note that in 1915 only 44 cases were reported. This reduction is due no doubt to the experience in diagnosis afforded in 1914; the special research instituted by the State Board of Health, financed by an anonymous donation and directed by the Rockefeller Institute; and the education of the people as to its dangers and symptoms.

The conclusions of Doctor Caverly are as follows:

"The disease seems to be a rural disease.

"The disease, while apparently following the arteries of human intercourse, makes long jumps between towns and attacks persons in isolated and inaccessible regions.

"August, September and October are the favorite months for the disease in Vermont.

"A community visited by an epidemic of this disease has, apparently, comparative immunity thereafter for several years. The experience of Barton might suggest a four-year period.

"As has been stated, poliomyelitis, under our regulations, is reportable and subject to 'Full Quarantine' and terminal disinfection. In the present state of our knowledge of its epidemiology, there may be a theoretical question as to the utility of the quarantine. Practically quarantine measures, well carried out, *appear* to check community outbreaks. So, in the absence of more positive proof of its inutility, we would not be warranted in abandoning it.

"In this connection, the following from Doctor Flexner's paper summarizes our present knowledge of the ways the infection is spread:

" 'The data which I have had the pleasure of laying before you have led me to believe, first, that the microbic agent of epidemic poliomyelitis is present in the nasal and buccal secretions and is carried by persons, not insects, and communicated by them in such manner as to gain access to the upper respiratory mucous membranes of other persons, among whom a portion,

being susceptible to the injurious action of the virus, acquire the infection and develop the disease.

"The clinical variety or form of the disease which they develop may be the frankly paralytic, the meningitic, or the abortive and ambulatory in which no severe symptoms whatever appear. But however the persons may be effected, they become potential agents of dissemination of the virus of poliomyelitis, as do a number of healthy persons who have been in intimate contact with those who are ill, and another group of persons who have recovered from an acute attack of poliomyelitis. These several classes of infected or contaminated persons constitute the active means through which the virus is spread and to the control of which sanitary measures designed to prevent epidemics must be directed.'"

✱

A Study of Venereal Diseases.—The Moral Survey Committee of Syracuse, N. Y., has issued a report of a third statistical study of venereal diseases in that city covering the year 1915. Comparisons with earlier studies for 1910 and 1913 indicate a reduction of 27.7 per cent. in gonorrhœa and 45.4 per cent. in syphilis, but that from 15 to 20 per cent. of men and from 5 to 7 per cent. of women in the city are or have been infected with one or the other disease. The reduction in syphilis is credited mainly to the closing of the segregated district in 1913; in gonorrhœa, mainly to improved control of the liquor traffic and suppression of disorderly hotels and drinking places where men and women congregated.

✱

St. Louis (Missouri) Courts and Prostitution.—An investigation made during the first part of 1915 at the instance of the Neighborhood Association of St. Louis regarding the handling of prostitution cases in the courts of that city was undertaken because of the increase of prostitution during the three months before the investigation began, as compared with its marked reduction during the preceding ten months following the close of the segregated district. Mr. John G. Fertig, who made the inquiry, presents statistics upon the number of cases brought before the city courts and their disposition, and shows that less than 10 per cent. of the cases of prostitution brought before the city courts were "corrected," and that the practice of putting convicted prostitutes on parole has not in any case resulted in reformation. He concludes that, "The failure to suppress commercialized prostitution in St. Louis must be charged against the city courts and Division No. 2 of the Court of Criminal Correction."

✱

Prison Eye Clinic.—The New York State Commission of the Blind was recently asked to find employment for a blind inmate of Sing Sing prison, whose term of imprisonment would expire within a few weeks. Inquiry disclosed that this man had served a long term, during which period blindness had gradually developed in both eyes. Coincident with this application for employment an appeal was made to the commission by another inmate of Sing Sing for intercession with the governor for a pardon in order that treatment for a serious eye condition might be secured.

A discussion of these two cases with Warden Kirchwey presented an opportunity to offer the services of the commission in an attempt to detect the conditions leading to blindness when the prisoner is admitted and inaugurate remedial treatment which may be of large service in sending him forth to meet the world at the end of his term.

Since this is directly in line with the plan for the New Sing Sing, the consent of Warden Kirchwey was readily secured to establish an eye clinic at the prison, treating and operating for such eye conditions as are found and as may be expected to lead on to blindness or defective vision.

An ophthalmologist of recognized standing, a member of the Advisory Council with the commission, offered his services for one day each week, and the Commission's Social Service nurse, with headquarters in New York City, was assigned to assist; an inmate of the prison whose previous occupation would qualify him to be taught refracting, and another inmate, a registered physician, are assigned as assistants. Suitable dark room and examining room are afforded adjacent to the prison hospital, and medicine and other accessories are furnished at the prison.

It is apparent that a prison population presents a favorable field for preventive medicine to demonstrate its service. It is also apparent

that a state can practise a distinct economy in citizenship as well as in dollars and cents by offering preventive medicine to this population.

As soon as facilities and funds permit, similar clinics will be offered to other state prisons.

✠

Coöperative Pasteurization.—In the East it is more or less a debatable question as to the benefits to be derived from coöperation in the various processes involved in the milk industry. Yet according to the May *Monthly Bulletin* of the California State Board of Health such coöperation has proven most satisfactory in that state. While, according to the new California milk law small dairies may have their cows tuberculin tested without restoring to pasteurization, owners of small dairies may desire it any way. An example of coöperation in pasteurization is furnished by the town of Riverside, where such a plant has been running since 1911, organized by seven dairymen.

To quote from the report of the city health officer of Riverside as to the operation of this plant and its effect upon conditions in that town:

"In July, 1910, milk retailed at 8½ cents per quart. In November, 1910, the price was raised to 10 cents per quart. A series of tests showed the butter fat content to vary from 3 to 4½ per cent., depending to a certain extent upon the convenience of the water supply.

"After formation of the dairy company, the price was immediately reduced and reductions have continued until at the present time milk containing 4.2 to 4.5 per cent. butter fat is sold for fifteen quarts for $1.00, or at 6⅔ cents per quart.

"Since the formation of this company the number of dairies in the county has doubled.

"All the milk and cream is pasteurized by being subjected to a temperature of from 147 to 160 degrees for 10 to 15 minutes. The milk is first aërated and cooled at the dairies, delivered immediately to the central plant, where it is pasteurized, bottled, reduced to a temperature of between 30 and 40 degrees Fahrenheit in the precooling plant and delivered to the consumer.

"For the purpose of delivery but three wagons are used for the retail trade, whereas formerly the same amount of milk from the same number of dairies would have required fifteen wagons.

"The total investment in this distributing station at the present time represents in real estate, buildings, machinery and improvements about $31,000. There is a floating indebtedness of $11,000, drawing 6 per cent. interest, and accumulated assets of $9,500.

"Three dairymen are employed to manage the business at a sufficient salary to justify them in accepting such employment and discontinuing active dairy work. Sweet milk and cream are sold not only in the city of Riverside, but in the adjoining towns.

"There are at the present time ten employees: the three dairymen above mentioned, three men for delivery and three men who operate the plant, and one bookkeeper.

"The advantage of this method of handling the city milk supply is apparent. If at any time it is found on inspection that any of the contributors to this station are producing milk under conditions which are not satisfactory, a notice to the producer from the plant is sufficient to prevent the sale of this milk. The fact that our general milk supply is pasteurized does not in any way deter either the dairymen or the inspectors from insisting upon the production of clean milk.

"I believe that the result of the central dairy plant experiment has fostered and very greatly increased the dairy business; that the dairymen receive more for their products; that the consumer receives a higher grade of milk at a less cost, and that two-thirds of the vexatious problems in the control of a small community's milk supply have been solved by the introduction of this plan."

✠

Relative Mortality of Abstainers and Non-Abstainers.—What appears to be a convincing argument for abstaining from alcoholic beverages to persons who are interested in enjoying their full three score years and ten is presented by Arthur Hunter, actuary of the New York Life Insurance Company, in the May *Monthly Bulletin* of the Department of Health of New York City, under the title of "Life Insurance and Drinking Habits."

After presenting in detail the statistics of the various insurance companies throughout America, the author comes to the following general conclusion:

"The opinions of the medical directors show

that the life insurance companies look with disfavor on applications from persons who drink freely although not to the point of intoxication, and on those who have taken alcoholic beverages to excess in the past but are temperate now. The statistics already submitted, and others to which reference has been made, prove conclusively that this attitude of mind is based on facts, and that a higher mortality must be expected on these types of users of alcoholic beverages. On the other hand, it is conclusively proved that total abstainers are longer-lived than non-abstainers, even excluding from the latter those who drank immoderately at the date of application for insurance or prior to that time. The experience of the seven American life insurance companies has proved that abstainers have from 10 per cent. to 30 per cent. lower mortality than non-abstainers, and there is no good reason for believing that if the other companies compiled their statistics there would be any different result, provided the companies exercised the same care in accepting abstainers and non-abstainers. The American statistics, now published, corroborate the British data in indicating the unfavorable effect of alcohol on longevity, and in showing that total abstinence decidedly increases longevity."

✱

The Milk Supply of New York—A Lesson in Municipal Sanitation.—Dr. Lee M. Steckel in *American Medicine* for May, 1916, tells of the tremendous task confronting New York in its fight for a sanitary milk supply.

"To furnish an adequate supply of pure milk to more than five million mouths is a task as difficult as it is interesting. The problem of New York City's milk supply presents one of the most important chapters in the complexities of modern urban life.

"It is no small undertaking when you consider that New York City consumes over 2,000,000 quarts of milk daily, produced by about 350,000 cows, scattered on 44,000 farms located in six states, is passed through 11,000 creameries and then shipped to New York, a distance of from 50 to 450 miles (in over 250 special milk cars); requires more than 6,000 wagons to deliver this milk in Greater New York, while there are about 14,000 stores retailing milk. All in all, it requires an army of 200,000 persons to carry out this gigantic task daily.

"There are now three grades of milk sold in the city. Grade A, both raw and pasteurized—for infants. The raw milk must come from cows free from tuberculosis, as shown by a tuberculin diagnostic test; it must conform to strict sanitary methods of production and handling, and must not contain more than a limited number of germs. It is distributed in bottles. Pasteurized milk comes from healthy cows and must be produced under sanitary conditions. The germ content is limited. It is also delivered in bottles. Grade B—is pasteurized milk for use by adults only. This milk comes from healthy cows and is produced under careful methods, but the germ content may be larger than in Grade A milk. Grade C—is milk which is not produced under as careful methods as the above grades. It must be pasteurized or boiled and only be used for cooking and manufacturing purposes.

"In order to ship milk to New York City, the dairyman must have healthy cows, clean barns, pure water supply, clean utensils, milk with clean hands; he must discard any abnormal milk, and he must keep the milk cold until delivered at the creamery. He must not ship the milk if there is an infectious disease at the farm. At the creamery, too, the milk must be kept cool until pasteurized and must be bottled under strict sanitary conditions. During transportation on milk trains, the milk must be kept cool and tightly covered. In the city plant, on the wagons at the stores, sanitary measures must be adhered to, in order to avoid any possible contamination.

"The fight for a sanitary milk supply for this city has finally been won. All factors are now harmoniously working together in an effort to supply New York City with the best milk obtainable."

Public Health Notes.

A State-Wide Campaign in Social Hygiene.—In the warfare against venereal diseases and allied evils, the Oregon Social Hygiene Society has now been engaged for five years. During that time its activities have been incessant. Its directors, serving wholly without pay, have been active workers, meeting in various committees many times each year. In the first years of effort, they withstood the reproaches of those who clung to the conspiracy of silence in matters of sex, and they suffered the vilification of "men's specialists" and other quacks who found their victims slipping from their clutches. The approved speakers of the society have given their invaluable aid freely and enthusiastically. They have made more than 1,500 addresses in more than 117 cities and towns in Oregon, and, indeed, in 15 cities of other states. They have prepared publications and exhibits. With great care they have arranged the details of many public meetings. They have cheerfully faced the discomforts of travel in sparsely settled regions of Oregon. They have given services which, measured by their earnings in gainful occupations, would have cost the state at least $10,000 a year; but of course such services could not be bought with money.

Other states have asked, "What is the secret of the success of the Oregon Society?" According to their repeated assertions, the Oregon Society is now regarded as the standard for state-wide social hygiene education in this country. Their only secret of success is their ability to command the continued labor and devotion of their committee members.

These men, and hundreds of men and women who have coöperated with them throughout the state, have been rewarded by abundant evidence of improved conduct and ideals. The chief sex lies, used for generations to excuse prostitutes, male and female, and to lead them on to the worst of contagious diseases and to moral degradation, are now known to be lies among thousands from whom the truth had been withheld. Now, after four years of public education, for a man to hold that sexual intercourse is a necessity for health, that gonorrhœa is not dangerous or that there should be a double standard of morality, displays such inexcusable ignorance of scientific facts that these harmful utterances are fewer by far than four years ago.

The distribution of 770,000 circulars, the presentation of exhibits to 113,000 persons, the holding of 1,500 public meetings, the reaching of 6,000 homes by personal visits, the placing of 2,100 State Board of Health Placards of warning against venereal diseases, the renewal of 400 quack medicine signs, the assistance of 6,000 men and boys who applied to the Advisory Department, the instruction, in specific ways, of parents, of teachers, of employers, of girls in factories and stores, of boys in morally dangerous occupations, of men in lumber camps and railroad shops, of groups everywhere in special need—all these and other activities of the society have done good to most communities in the state.

So far has the society gone in its campaign against fake advertising that not only has every newspaper in the state of Oregon cleaned its columns of the most pernicious types of quack doctor material, but one paper has been forced to issue a special edition for Oregon, purged of its vilest matter.

The work of the society has been made possible by subscriptions from private citizens in amounts from $1 to $500, aggregating several thousand dollars, and by the appropriation of $35,000 from the state.

It is virtually certain that the economic gain alone, due to curbing the spread of venereal diseases and the consequent increase in the number of days per year of productive labor of Oregon men and women, has in five years amounted to $200,000. Incomplete though the evidence for such an estimate must be, it is nevertheless extensive and sufficient to warrant the minimum named. The actual material saving to the state, due to this one cause, probably has been greater. The additional economic gain to the state during this period, due to the extermination of highly successful quacks, has certainly not been less than $100,000. The known financial condition of several fake concerns, previous to the opening of the campaign against them, indicates that this estimate is low. Considering nothing but the immediate gain in dollars and cents, the

returns to the state upon its investment in social hygiene education have been enormous. It is difficult to see how any state can afford *not* to make such an investment.

Information regarding the methods employed by the society and samples of its publications will be sent upon application to the Executive Secretary, 720 Selling Building, Portland, Ore.

*

The Possible Rôle of Books in the Dissemination of Disease.—An authoritative discussion of a practical subject is always to be welcomed. Such an article appears in the *Johns Hopkins Hospital Bulletin* for June, 1916.

From the public health standpoint books which have come in contact with patients suffering from the communicable or the contagious diseases are always likely to be considered factors in the spread of such diseases. Many individuals, in fact, attribute attacks of such infections as diphtheria to the handling of books previously used by individuals suffering from diphtheria, but in no instance has this relationship ever been satisfactorily demonstrated by the isolation of the diphtheria bacillus from this source. Despite this fact, current popular literature is full of references to this mode of infection.

A very careful series of experiments were carried on by Dr. C. A. Laubach with pathogenic organisms under various conditions. From these experiments which were repeated a number of times the following conclusions were drawn:

1. Pathogenic bacteria can seldom be isolated from books which have been handled by sick patients, and there is, therefore, no empirical reason for maintaining that books serve as vehicles of infection.

2. Direct sunlight and diffuse daylight are the most efficient germicides for organisms found on books, as they are for the same organisms under other conditions.

3. The fact that pathogenic bacteria, like the typhoid bacillus and diphtheria bacillus, can be recovered from artificially infected books under various circumstances after long periods of time, and the fact that the diphtheria bacillus does not lose in virulence during this period, are a sufficient reason for insisting upon the thorough disinfection of books which have been handled by patients.

Will the Private Practitioner Determine the Future of Public Health Work?—This is the question Dr. Haven Emerson asks in the *New York Journal of Medicine* for May, 1916.

"It is my belief that the practitioner of medicine, as an individual and through his scientific and socio-professional organizations can direct the development of future public health activities to the very great benefit of the community and a coincident improvement in his own status, professional, social and economic.

"It may be accepted as axiomatic that public health work can progress only so far and so fast as the family physician is ready to go. If he had disapproved of the use of diagnostic throat cultures, diphtheria could not have been reduced. When he found the examination of sputum and the Widal test of value to his patient, he acknowledged the right of the state to inquire as to the identity, residence, occupation, etc., of his patient for the community's sake.

"If the practitioner of medicine had not been heart and soul in the attack upon excessive infant mortality, the appeals of the public agent would have fallen on deaf ears. The community would have discounted the educational propaganda of health departments if the family doctor had not agreed in and supported the campaign.

"The physician who waits for the typhoid which used to flourish, and mourns the good old times when he could rely upon a living in summer from diarrhœas of infants, and in winter from the devastating epidemics of diphtheria and scarlet fever, must see the writing on the wall, and reach out for practice among people who expect a physician to protect them as individuals in the way the community is protected by public health officials, by studying how the well may be taught to keep well, by hunting for the cause and following his case until he is assured that prevention as well as curative treatment has been applied.

"He must familiarize himself with the hazards of occupation and environment, of housing and of habit, and use the Health Department as his own professional research force to solve his personal problems, and to apply the preventive measures for the community's sake as he himself has in the case of his patient.

"Health departments can and doubtless will turn over to physicians a larger and larger share

of work as fast as the practitioners show their willingness to join in the partnership of prevention.

"This most desirable incorporation awaits only the action of the organized medical profession. We are all enlisted in the same army, the army of sanitation, the army for social protection and reconstruction."

✱

The Movies as a Health Problem.—The editor of the *Modern Hospital* has the following to say on this timely question:

"Every day we see or hear some reference to the educational value of motion pictures, and great numbers of writers, artists, philanthropists, and reformers are concerning themselves with one phase or another of that problem.

"We hear learned discussions pro and con of the relative value of this or that kind of picture, and the censors almost tear each other's hair over the question of the suppression of a 'scene' of one kind or another.

"Perhaps it might easily be said that a discussion of the ethics and the sociology of the motion picture is foreign to the purposes and functions of a hospital journal, or a publication devoted to the public health, but suppose there was a real vital health problem coupled with a most important social question—it seems to us that in such an event the *Modern Hospital*, being deeply concerned about whatever has to do with the health of the people—moral, mental, or physical—would be entirely justified in approaching the problem from its own viewpoint.

"And we do see a health problem in the present movie craze. We see our children and our young people, and also our elders, running to the movies night after night; we see them less content to spend the evening at home; we see them less frequently reading one of the classics, or even the better current works of fiction, to say nothing of serious literature.

"We are seeing less of settled home life and its interests, less of that introspection and meditation so necessary if we are to approach each day's tasks with proper forecast and prearrangement.

"We are seeing our young people more and more dependent on extraneous influences and outside excitement for entertainment, less self-contained, and less capable of the enjoyment of life for what is stored within themselves.

"We believe that the movie craze is doing more to destroy the home life of the American people than all other influences combined; and we believe that it is as harmful an influence, and in the same way, as cocaine or morphine or whisky.

"We believe the educational value of the movie is infinitesimal in comparison with its power for harm."

✱

The Convalescent Field—Its New and Changing Borderlines.—In the *Modern Hospital* for June, 1916, appears an article from the pen of Dr. Frederick Brush which is timely and interesting. As Doctor Brush points out "the hospital efficiencies most needing development are not now internal, but are in the lines of the hospital extensions—in work for health outside of the main buildings. Better dispensary service (with some branch stations), health center work from hospitals, adequate social service, long-term 'follow,' prevention, convalescent supervision—these indicate the main attracting possibilities of the newer hospital efficiencies. The American hospital is yet greatly underrated as a health instrument. It survives many stresses, grows steadily, and gets funds beyond almost any other organization. The present need is not for so many new, small, and precarious associations, but longer, stronger extension arms to the hospitals."

Doctor Brush then traces the development of the convalescent home. (1) The older type of convalescent home usually small. (2) The larger institution affording some classification of the patients, medical attention, occupational training, etc. (3) The country branch hospital. (4) The pay convalescent home. (5) Home convalescence. (6) Convalescence.

The more recent extensions and plans in this field cover (1) surgical dressings; (2) heart disease; (3) privisions for men; (4) rheumatism, tuberculosis, bone, kidney and other forms; (6) mental convalescence; (7) adolescence; (8) colored people; (9) preventive convalescence.

Hospital efficiency thus covers convalescence, which is taken here to include health increase, health holding, and prevention of health deterioration. Training the sick, handicapped or subnormal, to their fullest working efficiency, and

keeping them there, differs widely, as a plan, from the old admitting, treating, and discharging of patients. With this preventive health upbuilding well under way, there would be needed five beds where now is one. We have tested and estimated that, at lowest, 10,000 adults per year should and would go out for short periods of health building from New York dispensaries alone; a little over 500 may go this year. The dispensaries and the various social services must be the main dependences in finding and sending these patients. The medical-social machinery to accomplish this does not yet exist, or is inactive. This is really the big end of the convalescent job; and scarcely anybody is on it.

*

The Use and Abuse of a Public Health Laboratory.—Modern medicine has undergone a revolution during the past two decades. With Pasteur came a new conception of disease. Koch, Laveran, Klebs, Loeffler and others lighted the way to the heights to which modern medicine has climbed. The article in the *Southern Medical Journal* for June, by Dr. C. R. Stringily, on the use and abuse of this new development, is doubly interesting therefore.

"The microscope, the laboratory, in conjunction with practical test and scientific research, has done much to enable the modern school to know the cause and to intelligently combat disease, and while there is much yet to know, empiricisms need not altogether satisfy.

"Aside from research work, the use of the laboratory in the diagnosis is limited only to the extent the knowledge of cause and nature of disease is limited, and in many diseases, though the cause is unknown, the microscope reveals the morbid processes with such certainty that we are at least able to label these.

"That the state laboratory is educational to the average physician I believe there is no gainsaying. His conception once was that diphtheria was a disease of the upper air passages. Our laboratory experience teaches us that occasionally we find violent infection in other locations, due to the Klebs-Loeffler bacillus.

"Unquestionably, the most serious abuse of the laboratory—and especially is this true in the institutions supported by the state—is occasioned by the lack of skill and caution with which physicians secure and prepare the specimen upon which the laboratory diagnosis must be founded. It seems to the laboratory man—it may be that he is somewhat influenced by his enthusiasm for his own work—that the conscientious physician of today cannot hope to fully serve those who depend upon his skill for life and health, those who depend upon him not only to protect them, but to protect his family, the friends and the public from the infection, unless he uses the laboratory; yet, use is futile unless the physician gets the material to the laboratory which will reveal the real condition. Not only is the reputation of the laboratory dependent upon the skill of the physician who prepares the specimen, but, and of real importance to the public, the treatment and prevention of disease depends, in many cases, totally, and largely, in a constantly growing number, upon that skill used by the physician sending the specimen."

*

Five Years Progress in the Diagnosis and Treatment of Consumption by Massachusetts Physicians.—In 1911 Dr. John B. Hawes of Boston published a paper on the early diagnosis and prompt treatment of pulmonary tuberculosis. The conclusions from this study "were not encouraging, nor did they reflect creditably on the ability of our medical profession to diagnose tuberculosis in its early stages or its willingness to institute prompt and aggressive treatment. For instance, out of the 500 patients then in our sanatoria, well over 50 per cent. were told by the first doctor they consulted that they did not have consumption, while of those who first went to a doctor on account of a hemorrhage, nearly half were informed that the blood did not come from their lungs, and that they did not have tuberculosis."

Since that time a vigorous anti-tuberculosis campaign has been carried on. In the *Boston Medical and Surgical Journal* for June 1 Dr. Hawes presents some facts which "are based on a study of 100 consecutive cases diagnosed as tuberculosis at the Massachusetts General Hospital, 100 at the Boston Consumptives' Hospital, and a further study of 500 patients at the North Reading, Lakeville, Westfield, and Rutland State Sanatoria.

"1. In the early diagnosis of tuberculosis distinct improvement has been made during the

past five years, as shown by the increased number of diagnoses of incipient tuberculosis without the presence of a positive sputum.

"2. As far as can be judged from figures obtained at the Massachusetts General Hospital and the Boston Consumptives' Hospital, diagnosis in all cases was made very promptly in 1910, and likewise in 1915.

"3. There has been a vast increase in the number of patients who have gone to a doctor before they suspected they had consumption: as shown by the figures, 77 out of 500 in 1911, and 408 out of 500 cases in 1915.

"4. The chief symptoms for which patients consulted their physician in 1915 remain the same and in the proportion as was found to be the case in 1911.

"5. In cases of hemorrhage fewer patients who first consulted their physician for this reason have been told that they did not have consumption in 1915 than in 1911. This is likewise the case in regard to the patients who were told that they did not have consumption on first consulting their doctor. The improvement in these two respects, however, is not as great as was to be hoped.

"6. The diagnoses given to patients by their physicians who said that they did not have consumption in 1915 range themselves in the same main groups as was the case in 1911. It is not encouraging that, at the present time, out of 500 consumptives, over 50 per cent. were not given to understand by their physician that they had consumption.

"7. There has been an encouraging increase in the number of applications for our State Sanatoria which were made by the physician either at the time of the examination of the patient or immediately after. In view of the length of the waiting list for the Massachusetts State Sanatoria this is an important thing for the physician to remember if he wishes to secure early treatment for his patient.

"8. The number of physicians visited by these 500 patients in 1915 was approximately the same as the number in 1911. Of the 1915 patients, 163 consulted only one physician, while 336 went to two or more physicians.

"9. Of these patients who consulted two or more physicians, 41 per cent. went to another physician in order to be sure the first was right, 23 per cent. because they did not improve under the treatment given by the first physician, and 17 per cent. because the first physician advised them to do so.

"10. According to the statements given by these 500 patients, it cost $5,435, or approximately $10 per patient, for them to obtain diagnosis and treatment for their condition."

*

Hippocrates on Hookworm Disease.—The following excerpt from the works of Hippocrates, published in French in Paris, in 1846, Vol. 5, page 165, is of unusual interest. Evidently a case of "miner's anæmia" is described:

"Symptoms of the miner—the hypochondrium stretched straight; fatty spleen; extended stomach, a little hard; difficulty in breathing; paleness. In him the illness attacked his left knee causing a relapse. He was examined completely."

This passage occurs in connection with a description of an epidemic at Perinthus. The symptoms are highly suggestive of hookworm disease.

*

Stationary Population.—There are a hundred million people in the United States, whereas three centuries ago there were not one million. Meantime the population of Europe has grown enormously. Not long ago the British Isles contained fewer people than are now in the state of New York. In Frederick the Great's time Prussia had only five million inhabitants. From the beginning of the present industrial régime of factory production continuous growth in population has been an important factor.

But for years the birth-rate has been falling rapidly all over the Western World. So far, this has been virtually offset by a fall in the death-rate. Only in France has growth of population actually stopped. But there are more positive limits to a decline in the death-rate than to a decline in the birth-rate. Already in countries where hygiene is most advanced—as the United States, Great Britain, France, Germany, Switzerland—the death-rate is round fifteen to the thousand. Whether it can be got very much below that is a question.

Meantime, undoubtedly, smaller families are more and more the rule in the most civilized countries. It is pointed out that in such countries—or those of them that keep statistics on

the subject, which, to our shame, does not include the United States—the birth-rate has fallen to a level no higher than that of France several decades ago; and the French birth-rate kept on falling until it virtually equaled the death-rate.

Certain students of these phenomena see, in the not distant future—especially in view of the war and its possible after-effects in the way of enforcing economy of living—a positive cessation of that rapid growth of population which has characterized the modern era in Europe and this country; probably this is desirable. Humanity has been too cheap.—*Saturday Evening Post*, June 30.

*

Ankylostomiasis Campaign.—Dr. Don Morse Griswold, director of the campaign for the relief and control of the hookworm disease in the Island of Antigua, British West Indies, undertaken by the International Health Commission, in his April *Report of Progress*, states that:

"Census taking has been completed in all the villages. The only additions likely are people who move into the area before the campaign here is closed. The total number of people in the Belvidere District is 880.

"All of these people have been examined who are likely to be examined. Only one refusal of examination has been met; persons under treatment for other diseases are not examined, except with the consent of the attending physician. A spirit of procrastination is everywhere present, but this will not seriously delay the work.

"Of the 820 persons examined, 238 were found infected with hookworm. This makes a rate of infection of 29 per cent. for this group of villages.

"Of the 238 persons who were found infected, 222 have started treatment.

"Of those taking treatment, 62 have been cured; 53 were cured with two treatments, 5 with three treatments, and 4 with four treatments.

"Thirty-seven persons have been found infected with the Schistosome Mansoni. This infection is very rare in any part of the world. The small number of cases reported in the medical literature have mostly come from the West Indies. This will be made the subject of a special report, when the extent of the infection, and the clinical aspects of the disease have been thoroughly studied.

"There are five privies in the area which embraces 880 people."

Industrial Hygiene and Sanitation.

Free Insurance to Employees.—The following is a copy of a letter sent on April 1 by the Marconi Wireless Telegraph Company of America to all its employees:

"To All Employees,

"Marconi Wireless Telegraph Company of America.

"Being constantly mindful of the loyalty and efficiency of our employees, and appreciating those qualities upon which the continued success of our company depends, and after a careful study of more than two years as to the best method of showing our appreciation, it has been decided to maintain for all employees, without expense to them, insurance in the sum of $500 for all those who have been with us over one year but less than five years, and in the sum of $1,000 for all those who have been in the employ of the company five years or more.

"It gives us pleasure, therefore, to announce that you are now, and from this date, protected by life insurance payable to your beneficiary in the event of death while in our employ, without expense to you.

"The protection of one's family in event of death is of vital concern. The ordinary cost of life insurance in proper amount is so great as to cause a heavy burden upon the income. In addition, many would be unable to pass the rigid requirements of the necessary medical examination for individual insurance.

"We are, therefore, particularly pleased to announce that arrangements have been made by which this insurance will be granted upon present employees without medical examination.

"Attached is a form of application blank. Please fill this out at once and return it to the head of your department through the person

delegated to receive it. From the information on this application the insurance will be issued, and all charges will be paid by us. In the event of death of any employee the full amount of the insurance will be paid to his beneficiary. In the meantime, however, this insurance is effective April 1, 1916, upon all in the active service of the company on that date, whose period of service entitles them to receive such insurance.

"In consummating this arrangement, it gives us pleasure to acknowledge the high order of intelligent and zealous service which has characterized the work of our employees in the past and we have every confidence that it will be continued in the future.

"With every good wish for the greater success and happiness of all,

Very truly yours,

E. J. NALLY,

Vice-President and General Mgr."

The House That Jack Built.—(Not written by Mother Goose but by the general safety agent of the New York Central Lines and consists of two reels, 2,700 feet, and 178 scenes.)—Jack is a brand new film hero and his one besetting sin is carelessness. One night, however, Jack attended the Company's "Safety Rally" at which Jack and his wife saw pictures of railroad disasters due to carelessness. Men were shown losing fingers, eyes, legs and arms and other valuable adornments and by the time the Rally is over Jack decides it's about time to turn over a new leaf and be careful. So he goes home and "bends over the bed in which his two children are sleeping and resolves to banish carelessness forever."

The drama closes with a "cut-in" which reads:

Resolution became the Cat
That killed Carelessness, the Rat,
That was eating Happiness, the Malt,
That lay in the House,
That Jack built.

The Republican Platform Has Inserted This Plank.—"We pledge the Republican Party to the faithful enforcement of all federal laws passed for the protection of labor. We favor vocational education; the enactment and rigid enforcement of a federal child labor law; the enactment of a generous and comprehensive workmen's compensation law within the commerce power of Congress, and an accident compensation law covering all government employees. We favor the collection and collation under the direction of the Department of Labor of complete data relating to industrial hazards for the information of Congress to the end that such legislation may be adopted as may be calculated to secure the safety, conservation and protection of labor from the dangers incident to industry and transportation."

Minimizing Accidents in Shops.—The Department of Labor of the State of New York has issued a special bulletin on industrial accident prevention under the direction of the Industrial Commission. The pamphlet is divided into two parts. The first shows what progress has been made in the work of accident reduction in a few of the establishments visited, and the second is a discussion of the means by which these results have been accomplished.

"Every accident," says the bulletin, "indicates the presence of defects in materials, machines, methods or men, or, what is perhaps most common, in a combination of two or more of these elements. The relative weight to be given each of these factors is not constant for all industries nor for all plants in a given industry." After considerable experience one large steel plant has estimated that the efficiency of its safety work is distributed as follows:

	Per cent.
Organization	45
Attitude of officers	20
Safety committees	20
Inspection (workmen)	5
Education	30
Instruction of men	15
Prizes	9
Posting signs	3
Lectures	3
Safeguarding	25
Safety devices	17
Lighting	5
Cleanliness	3

The above distribution is suggestive at least of the nature of successful safety efforts.

The reduction of accidents depends, first of all, upon the attitude of the employer. It is of

little use to preach safety to men who work about unsafe machinery and in unsafe factories. Of course, guards cost money. But the compensation paid for a life or an eye would buy guards for belts and gears. Some accidents will still happen through the carelessness or ignorance of the workmen, the driving practices of tactless foremen, or through some other defects which cannot be prevented by mechanical guards.

The employer is not always in close personal contact with his men. In such cases he must delegate to his agents—his superintendents and foremen—the same authority and responsibility in the work of preventing accidents that he gives to them in maintaining the output of his plant.

✦

The Comfort of Women Employees.—Miss Marie Louise McComb, the welfare secretary of the Export Building in New York, is to be responsible for the comfort of all the employees of the forty-story New York skyscraper, from the heads of departments to scrub women. It is estimated that in this building there are about 600 women employees in the office forces, and for their comfort and convenience the welfare department is to be maintained as a part of the building equipment.

This service comprises five suites of rooms on floors so selected that they best meet the distribution of the women employees over the building. Each suite has a large "rest" room. It is comfortably furnished with chairs and lounges, and these, with the rugs, pictures, and window curtains, all harmonize in one color scheme, either green or brown. There is a silence room, in which there are four or five cots. The room is almost totally dark and here opportunity is given for complete rest for those women who become ill, faint, or nervous, and have to leave their work in search of relief.

✦

Government Survey of Health Insurance.—A pamphlet of some seventy-six pages entitled "Health Insurance: Its Relation to the Public Health" has recently been issued by the United States Public Health Service. The pamphlet was prepared under the direction of the Surgeon General and presents fully the economic claims and data underlying a system of sickness insurance for wage-earners. Much information from private and official sources is included, bearing upon the prevalence and cost of sickness and the conditions causing illness among employees. An attempt is made to apportion the responsibility for these conditions between employer, employee and the general public.

The remedy for the present situation is held to be some system of state-administered compulsory sickness insurance. A summary of the conclusions reached by the report is as follows:

"Health insurance is the most feasible measure, because (a) it is a method by which the cost of sickness is distributed among those responsible for conditions causing sickness and whereby the burden upon the individual is lightened, and (b) it gives a financial incentive for the prevention of sickness to those who are responsible for conditions causing sickness.

"Health insurance in its most highly developed form (a) provides for adequate cash and medical benefits to all wage-earners in times of sickness; (b) distributes the cost among employers, the public, and wage-earners according to their responsibilities; (c) becomes an effective health measure by stimulating the coöperative effort of the three responsible groups and by linking their efforts with those of national, state, and local health agencies; (d) correlates all the forces at work in the prevention of disease, and (e) affords a better basis for the coöperation of the medical profession.

"Under an efficient health insurance system a contribution of approximately 50 cents per week per insured person (25 cents by employees, 20 cents by employers, and 5 cents by Government) should enable the insured person to receive: (a) $7 per week when disabled on account of sickness or non-industrial accident for a period as long as twenty-six weeks in one year; (b) adequate medical and surgical care during disability; (c) medical and surgical care of wife of insured person during confinement; (d) a death benefit of $100. Budgetary studies of large numbers of workingmen's families show that many workers pay as high as 90 cents per week and receive little more than actual funeral expenses.

"A governmental system of health insurance can be adapted to American conditions, and when adapted will prove to be a health measure of extraordinary value."

Buttons.—The *Travelers Standard* for June describes in an interesting article the dangers which may arise in the process of making that commonplace but very necessary part of our wearing apparel, the button.

The most hazardous button factory is the one in which celluloid is mainly used as the basic material. In addition to the celluloid there is usually a stock of cardboard, varnishes, lacquers, thinners, japans, and coloring materials—all of them high inflammable, and some of them explosive under certain conditions.

The manufacture of metal buttons has other hazards which are envolved in the operation of stamping machines or other similar equipment. The chief hazard of the metal button factory is in the japanning department. In many respects japanning is done under the same hazardous conditions as coloring. The air in the neighborhood of the spraying machines is often saturated with explosive and poisonous vapors, and it is therefore important to install exhaust fans near them, or to provide other adequate means for securing positive and efficient ventilation.

Chronic bronchitis and bronchial hemorrhages are not uncommon among the workers, and these are attributable to the irritation of the respiratory passages caused by inhaling the dust. The dust hazard in button factories can be materially reduced by adequate general ventilation, supplemented by hoods and exhaust ducts placed close to dust-producing machines. It is evident that the hazards from power-driven machines in button factories are similar to those prevailing in many other industries, and as such they can be dealt with by mechanical safeguards. The dangers peculiar to the industry are confined to the hazards of fires, explosions, and poisonous fumes in certain types of button factories, and the occupational disease hazard in other types.

⚜

Industrial Anilin Poisoning in the United States.—The above is the title of an article by Rey Vincent Luce, M. D., of Akron, Ohio, and Alice Hamilton, M. D., of Chicago, which appears in the June *Monthly Review of U. S. Bureau of Labor Statistics*.

In describing the use of anilin in industries abroad and in this country, its toxic effects and symptoms of poisoning, reference is made to cases of industrial anilin poisoning which have occurred in the United States. The following are the conclusions arrived at in this report:

"Commercial anilin is a well-known industrial poison in Germany and Great Britain. It is just beginning to be known in the United States, where it has already been the cause of numerous cases of poisoning among men engaged in the manufacture of rubber goods, in reclaiming rubber from scrap, in making anilin from benzene, and in using certain washes for press rollers.

"It is a blood poison, causing the formation of methemoglobin with the consequent 'internal suffocation.'

"Poisoning may take place through the skin or the lungs. Usually in industrial cases both portals of entry play a part.

"Exposure to the fumes need not be excessive or long-continued to bring about serious symptoms in the susceptible.

"Young men are more susceptible than the old or middle aged, blonde than dark-haired men, heavy drinkers than the temperate.

"Hot, humid weather, heated rooms, and poor ventilation are important factors in the production of acute anilin poisoning.

"Early recognition of anilin poisoning is of prime importance so that the sufferer may be withdrawn from the danger of further exposure to the poison.

"Men working in anilin constantly seem to acquire a certain amount of tolerance to it; nevertheless, if the exposure is increased beyond the point of tolerance, there is apparently a cumulative effect, and symptoms of chronic poisoning result. After symptoms of poisoning have once manifested themselves, the patient is usually hypersensitive to the fumes.

"The treatment consists in fresh air, oxygen, and heart stimulants, especially camphorated oil. Prevention of subsequent exposure is imperative."

⚜

Eye Accidents in Pennsylvania.—Employers throughout the state have been more careful of the eyes of their workmen since the new Workmen's Compensation Act went into effect in Pennsylvania on January 1. It is probable that the number of cases of blindness from industrial accidents will be reduced to a fractional part of the number in previous years owing to the drastic provisions of the Workmen's Compensation Act

It has been the experience of officials of the Pennsylvania Association for the Blind, however, that many eyes that have been lost in industrial plants in this state were blinded through the carelessness of the employee rather than a failure of the employer to provide a proper safeguard. Since the first of the year the employers have been insisting upon the employees using the protection offered, and thus the number of accidents to the eye are doubtless being lessened.

✱

Health Insurance in California.—Through legislative action, there has been appointed in California a commission to study social insurance with special reference to sickness. This commission will work along lines similar to those indicated in the study which Massachusetts is now making of this problem.

✱

The American Association of Industrial Physicians and Surgeons.—More than one hundred physicians and surgeons engaged in the practice of industrial hygiene met at Detroit on June 12 and formed the American Association of Industrial Physicians and Surgeons. The organization which for some time has been in the process of formation is composed chiefly of men attached to large industrial and other corporations and to those whose interests lie in the same direction. The object is the study of industrial hygiene in its various branches and the development of methods and the care of employees.

Officers were elected as follows: President, Dr. J. W. Schereschewsky, of Chicago; first vice-president, Dr. Francis D. Patterson, Philadelphia; second vice-president, Dr. R. M. Leggee, Berkeley, Cal.; secretary and treasurer, Dr. Harry E. Mock, Chicago.

✱

Occupational Clinic to be Established.—Philadelphia soon will establish its first occupational clinic at the University Hospital for the purpose of investigating conditions under which persons coming to hospitals for treatment are employed. In this way the relation of disease to occupation can be studied, and recommendations made to safeguard the worker.

✱

Dr. Francis B. Patterson, head of the Pennsylvania State Industrial Safety Bureau, states that industrial accidents in the last year in the United States have killed almost 35,000 persons, injured almost 300,000, temporarily incapacitated 200,000,000 wage-earners and cost employers and employees $250,000,000.

✱

More than $9,000,000 was spent by individuals and corporations in New York state during the past year for the protection provided by the State Workmen's Compensation law.

Legal Decisions.

The Harrison Law Again.—The decision of the Supreme Court of the United States in the Case of *United States* v. *Jin Fuey Moy* has been criticized rather extensively by newspapers, health workers and others interested in the enforcement of anti-narcotic drug legislation as doing much to render the law valueless from a moral and health standpoint.

The court holds in this case that the words "any person not registered," as they are used in Section 8 of the Harrison law, mean *any person* in the class which by this section is required to register. That is, the words above quoted do not apply to every person in the United States.

The reason for this decision has not been thoroughly understood by the "laity" (speaking from the standpoint of the lawyer). Justice Oliver Wendell Holmes, as able and profound a judge as sits in any court in the common law countries of the world, states the reason in his opinion. The Harrison Act is a tax measure. It is so entitled. To hold that it is a police power measure would mean that it is unconstitutional. If it is to stand at all it must stand as a revenue measure. The following passage from the opinion makes clear the court's position:

"The district judge considered that the act was a revenue act and that the general words 'any person' must be confined to the class of persons with whom the act previously had been purporting to deal. The Government, on the other hand, contends that this act was passed

with two others in order to carry out the International Opium Convention (38 Stat., pt. 2, 1919); that Congress gave it the appearance of a taxing measure in order to give it a coating of constitutionality, but that it really was a police measure that strained all the powers of the legislature, and that Section 8 means all that it says, taking its words in their plain literal sense.

"A statute must be construed, if fairly possible, so as to avoid not only the conclusion that it is unconstitutional. . . ."

Those who are dissatisfied with the court's opinion may find comfort in the knowledge that Justice Hughes and Justice Pitney dissent.

*

Rat Proofing Ordinance Upheld.—*City of New Orleans v. Beck* Louisiana Supreme Court, April 24, 1916.—In this case a New Orleans ordinance requiring that certain buildings be made rat-proof was held to be a reasonable and valid ordinance.

In commenting upon the law which confers general powers upon local boards of health to enact ordinances for the protection of the public health, the court significantly says:

"If a board of health has the power to order the vacation or demolition of any building when necessary for the protection of the public health it surely possesses the *lesser* power to order any building to be put in such condition as to prevent its becoming a focus of plague infection.

"The law makes the board of health the judge of the necessity for the protection of the public health and of the means to be adopted for that purpose."

Health officers will be further interested in the mention by this court of the following ancient maxim of law:

"Salus populi est suprema lex, a maxim meaning, 'The health of the people is the first law.'" (35 Cyc. 714.)"

Kansas Supreme Court Holds that City Ordinance May Impose a Higher Standard for Milk Sold in the City than Required by the State Regulation.—The State Board of Health of Kansas, by authority of a State law, established certain standards for milk sold in the State. The city of Kansas City, Kans., adopted an ordinance establishing a higher standard for milk sold in the city.

A dealer was convicted of selling milk which was below the standard required by the city ordinance. He asserted that the city ordinance was void because it was in conflict with the State regulations, but the Supreme Court of Kansas decided that the city ordinance was valid.

In short, the power of the State Board of Health to provide standards of milk sold is not an exclusive power. In the words of the court:

"It is well settled in this State that, where power is conferred upon cities to enact ordinances for the preservation of peace and good order within the city or for the preservation of the health of its inhabitants, it may be exercised, although the legislature has provided State regulations on the same subjects."

Of course the local authorities are not hereby authorized to do anything inconsistent with the state wide regulations. An ordinance reducing an abrogating state legislation or regulation would be inconsistent and void but, in accordance with this opinion, an ordinance increasing for the city the stringency of local regulations may be regarded as thoroughly consistent. The ordinance here involved also made penalties for violation more severe than those imposed by state law.

The case is *Kansas City v. Heure*, 153 Pacific Reporter 548. This decision is plainly correct and the same result would probably be reached in any jurisdiction under analagous circumstances.

Personal Notes.

At the sixty-seventh annual meeting of the American Medical Association, held in Detroit during the week of June 12, the following officers of the section in public health and preventive medicine were elected:

Chairman, Dr. Otto P. Geier, of Cincinnati; vice-chairman, Dr. Ernest C. Levy, of Richmond, Va.; secretary, Dr. A. M. Harvey, of Chicago, Ill.; orator, Dr. W. S. Rankin, of Raleigh, N. C.; delegate, Dr. W. C. Rucker, of Washington, D. C.; alternate, Dr. J. N. Hurty, of Indianapolis, Ind.

Dr. George P. Paul of Boston has started for Trinidad in the service of the International Health Commission.

*

Dr. Montgomery E. Leary of Rochester, N. Y., was reelected president of the New York State Sanitary Officers Association at the Annual Meeting held in Saratoga Springs, June 10.

*

Mr. E. B. Johnson has been appointed Agent for the Board of Health of Watertown, Mass.

*

Arthur A. Eisenberg has been appointed Director of the Pathological Laboratories of the St. Vincent Charity Hospital of Cleveland, Ohio.

*

Prof. Selskar M. Gunn has resigned as Director of the Division of Hygiene of the Massachusetts State Board of Health. Dr. Lyman H. Jones has been appointed by Commissioner A. J. McLaughlin to succeed him.

*

The following persons were elected to membership in the American Public Health Association, June 19, 1916:

Dayton J. Long, M. D., Piedmont, West Virginia. Board of Health.

George H. Jennings, M. D., Jewett City, Conn.

Wm. F. Allison, Seattle, Wash. Professor of Municipal and Highway Engineering.

George H. Th Sparling, M. D., Newcastle, Wash. County Health Officer.

Isaac Mayhugh, M. D., Barstow, Texas. County Health Officer.

J. T. Horton, M. D., Quanah, Texas. Formerly County Health Officer.

Henry E. Berger, Jr., Board of Health, Wellesley, Mass.

George L. Affelbach, M. D., Chicago, Ill. Illinois Department Factory Inspection.

James Alner Tobey, Assistant Health Officer, Summit, N. J.

Montgomery M. Harmen, M. D., Eustis, Fla.

Irs. C. Harman, A. B., M. D., Chicago Heights, Ill.

Will. H. Aikman, Natchez, Mississippi. County Health Officer.

Charles P. Caldwell, M. D., Chicago, Ill.

Current Public Health Literature.

AMERICAN.

Albany Medical Annals.

XXXVII. June.

Medical Expert Testimony. Alden Chester.

American City, The, New York.

XIV. May.

Public Comfort Stations. W. P. Gerhard.

Hand Flushing—Its Place in the Street Cleaning Field. R. W. Parlin.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans.

III. June.

The Employment of Ray Poison as a Measure for Preventing and Exterminating the Plague. Toyojiro Kitano.

Boston Medical and Surgical Journal.

CLXXIV. June 15.

The Physician and the Prevention of Industrial Accidents. Herbert L. Cronin.

Engineering Record, New York.

74. June 17.

Abstracts of Papers Presented at the 36th Annual Convention of the American Water Works Association.

Interstate Medical Journal, St. Louis.

XXIII. June.

Alcohol and Narcotics From the Psychological Point of View. G. T. W. Patrick.

The Hereditary Transmission of Degeneracy and Deformities by the Descendants of Alcoholized Mammals. Charles R. Stockard.

Alcoholism, A Symptom. William A. White.

The Diagnosis of Delirium Tremens. Charles E. Sceleth and Arthur F. Beifeld.

Alcohol and Art. Arthur C. Jacobson.

The Influence of Alcohol on the Progeniture. Alfred Gordon.

A Brief Consideration of Some Mental Characteristics of the Narcotic Habitue and a Suggestion for a Feature in Management. Henry Beates, Jr.

Alcoholism and Feeble-Mindedness. Henry H. Goddard.

The Drug Traffic and Its Victims. Burdette G. Lewis.

Alcohol and Narcotics. Robert T. Morris.

The Pathogenesis of Alcoholism and Narcotism and the Treatment of Their Causes. Tom A. Williams.

Medical Studies of Alcohol Half a Century Ago. Henry O. Marcy.

The Rational Consideration of Narcotic Addiction. Ernest S. Bishop.

The Cigarette as Related to Moral Reform. D. H. Kress.

Journal of the American Medical Association, Chicago.

LXVI. June 3.

The Value of Anaphylaxis in the Treatment of Gonorrheal Infections. Louis D. Smith.

A Study on Food and Fuel Value of the Dietary at the New York Municipal Sanitarium. R. J. Wilson and W. L. Rathbun.

June 17.

Some of the Larger Problems of the Medical Profession. Rupert Blue.

Dispensary Abuse and Certain Problems of Medical Practice. J. Whitridge Williams.

Trench Foot Tetanus. G. G. Davis and J. J. Hilton.

Journal of Bacteriology, Baltimore.

I. May.

Studies on Aerobic Spore-bearing Non-pathogenic Bacteria, Part I. Introduction. J. B. Lawrence and W. W. Ford: Spore-bearing Bacteria in Milk.

The Number of Colonies Allowable on Satisfactory Agar Plates. Robert S. Breed and W. W. Dotterrer.

A Modification of the Hygienic Laboratory Method for the Production of Tetanus Toxin. H. L. Wilcox.

A Method of Anaerobic Plating Permitting Observation of Growth. H. M. Jones.

Testicular Infusion Agar. A Sterilized Culture Medium for the Gonococcus. I. C. Hall.

Journal of Infectious Diseases, Chicago.

18. June.

Immunologic Studies of Hodgkin's Disease. J. J. Moore.

A Study of Gas-Production by Different Strains of Bacillus Abortivo-Equinus. E. S. Good and L. S. Corbett.

A New Culture Medium for the Isolation of Bacillus Typhosus from Stools. J. E. Holt-Harris and Oscar Teague.

Studies in Diphtheria in Cleveland. R. G. Perkins, M. J. Muller, H. O. Ruh.

A New Differential Culture Medium or the Cholera Vibrio. Oscar Teague and W. C. Travis.

A Variation of Gemmation of Blastomyces Dermatitidis in the Tissue Lesion. H. W. Wade.

The Coexistence of Antibody and Antigen in the Body. B. S. Dinzer.

An Improved Brilliant-Green Culture Medium for the Isolation of Typhoid Bacilli from Stools. Oscar Teague and A. W. Clurman.

A Method for Preserving Typhoid Stools for Delayed Examination, and a Comparative Study of the Efficacy of Eosin-brilliant-green Agar, Eosin-methylene-blue Agar, and Endo Agar for the Isolation of Typhoid Bacilli from Stools. Oscar Teague and A. W. Clurman.

Nurse, The, Jamestown, N. Y.

V. July.

Tuberculosis: Part VI. Daily Routine—Treatment of Symptoms—Care of Advanced Cases—Summary. Thomson Frazer.

Ambulance Duty with the Expeditionary Force in Mexico.

What People Should Know about Cancer. Francis C. Wood.

The Nurse and the Mental Patient: Part III. Anne E. Perkins.

The Rôle of the Visiting Nurse: VII. The Tuberculosis Nurse. Stella Fuller.

Journal of the National Dental Association, Huntington, Ind.

III. May.

Dental Research, Its Place in Preventive Medicine. Charles H. Mayo.

Some Evidences of the Importance of the Dental Path as a Source of Serious Localized and General Infections. T. B. Hartzell.

New York Medical Journal.

CIII. June 10.

Epidemic Pneumonia in the Tropics. J. H. Egbert.

June 17.

Camp Sanitation. F. W. Huntington.

Public Health Journal, Toronto.

VII. June.

Sewage Disposal by the Activated Sludge Method. T. Chalkley Hatton.

The Periodic Medical Examination. George Elliot.

Social Hygiene, Baltimore.

II. July.

State-wide Education in Social Hygiene. William T. Foster.

Sex in Life. D. B. Armstrong and Eunice B. Armstrong.

How Shall we Teach?

Sex Education in the Home and High School. James E. Peabody.

Social Hygiene in Settlement Work. Walter Clarke.

Syphilis and Society. Hugh Cabot.

The Prevalence and Prevention of Syphilis. Edward B. Vedder.

United States Public Health Reports.

XXXI. June 2.

Public Health Administration in Florida. Carroll Fox.

June 9.

Cyanide Gas for the Destruction of Insects. R. H. Creel.

June 23.

The Notifiable Diseases. Reported Prevalence during 1915 by States.

BRITISH EMPIRE.

British Medical Journal, London.

May 13.

Importance of Method in Isolation of Pathogenic Organisms of Typhoid Group from Feces. C. H. Browning and L. H. D. Thornton.

Examination of Fifty Dysentery Convalescents for Carriers. J. A. Arkwright, W. Yorke, O. H. Priestly, W. Gilmore.

Easy and Rapid Method of Doing Widal's Reaction for Typhoid. A. C. Coles.

May 20.

Excystation of Entameba Histolytica as Indication of Vitality of Cysts. W. J. Penfold, H. M. Woodcock, A. H. Drew.

Amebic Dysentery in Man Who Never Left England. C. Worster-Drought and D. D. Rosewarn.

Simple Portable Refrigerating Box and Its Use as Temporary Incubator in Military Work. S. Delépine.

Journal of State Medicine, London.

XXIV. June.

The Rapid Production of Antidysenteric and Antimeningococci Sera. Simon Flexner.

Electrical Treatment of Milk for Infant Feeding and the Destruction of Bacillus Tuberculosis. J. M. Beattie and F. C. Lewis.

The Care of Children under the School Age. David Forsythe.

Journal of the Royal Sanitary Institute, London.

XXXVII. June.

Food Inspection; Standard of Purity of Food Supply in War-time, and the Utilization of Condemned Stores. J. Wright Mason.

Tubercular Diseases of Children in Milk Supply. J. M. Beattie.

Sewage Purification Plants for Small Country Residences and Isolated Buildings. A. P. I. Cotterell.

Made-down and Tenement Houses. G. M. Pettit.

Medical Officer, London.

XV. May 27.

Smallpox and Vaccination. W. M. Kenna.

The Persistence of Infection of Scarlet Fever in Individual Schools. W. H. Hamer.

June 3.

The Insanitary Gulley. J. T. Neech.

June 10.

The Treatment of Tuberculosis with Mixed Tuberculin. Douglas Martin.

Public Health, London.

XXIX. June.

The Seasonal Prevalence of Infectious Disease.

Epidemic Cerebro-Spinal Meningitis.

The History of the Birth and Death Rates in England and Wales taken as a Whole, from 1570 to the Present Time. John Brownlee.